Dental

Abstracts

a selection of world dental literature

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Dental Abstracts

. . . . a selection of world dental literature

Lon W. Morrey, D.D.S., editor
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AMERICAN DENTAL ASSOCIATION

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Dental Abstracts has these purposes

1. To present a selection of pertinent literature representative of all points of view within the profession;

2. To provide, by a few hours' reading each month, a survey of the significant advances being made by dentistry throughout the world, as reflected in current dental literature; and

3. To supply enough data in each abstract so that the reader may determine whether he wishes to refer to the original article for more complete information.

The abstracts are grouped in broad classifications. The specialist will learn from this periodical of work done in other fields as well as in his own. The general practitioner will be able to keep abreast of modern knowledge in the various specialties. Articles from which abstracts have been made are on file in the Library of the American Dental Association and may be borrowed by members of the Association. Requests for articles should be addressed to the Bureau of Library and Indexing Service, American Dental Association, 222 East Superior Street, Chicago 11, Illinois. Only three articles may be borrowed at one time, and they may not be kept longer than one week. No charge is made to Association members for this service.

Operative dentistry

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Rehabilitation and equilibration

Some details of conservative treatment of temporomandibular joint arthrosis

(Nagra hjalpmedel vid konservativ behandling av kakledsbesvar)

S. Green. *Svensk tandlak.Tskr.* 49:455-462 Sept. 1956

Since the surgical treatment of temporomandibular joint arthrosis is being replaced with conservative therapy, new methods and apparatus have been developed.

The author spent a month with Professor Steinhardt in Germany, to follow the treatment of some 30 patients with different symptoms. Most patients were treated by conventional methods (bite correction treatment and relief within the stomatognathic system).

In patients with crepitation as the only symptom, Steinhardt recommends exercising the masticatory muscles before every meal. In the event of soreness or pain, diathermy is utilized.

Many patients had obvious dysfunctions that, if left untreated, would cause deformation of the temporomandibular joint. In these patients the treatment was carried out by selective grinding and dental prostheses.

In order to obtain quick relief in patients with acute symptoms, an acrylic apparatus with bilateral springs which open dorsally can be used (Fig. 1). The springs are guided by buccal grooves in the acrylic resin. The pressure on the disk and the glenoid fossa is reduced as the springs tend to press the condyles posteriorly. At the same time there is a reduction of movement and prevention of tooth clenching. After the

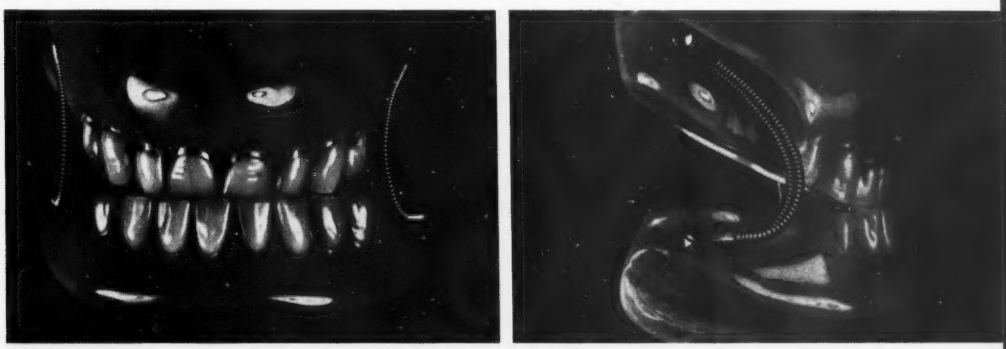

Figure 1 Two views of acrylic apparatus with bilateral springs

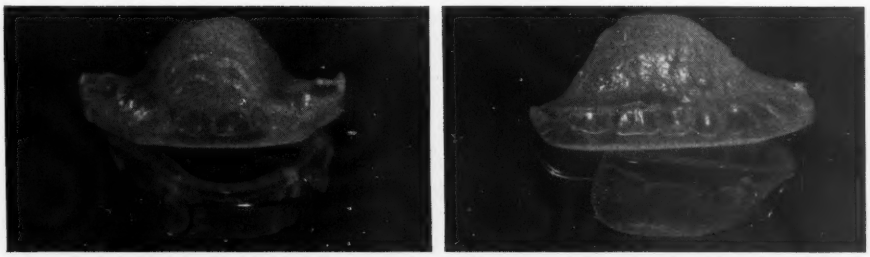

Figure 2 Two views of activator with two parts

acute symptoms have disappeared, further treatment can be given.

A similar apparatus can be used to treat fractures of the alveolar process. Bands connected by a labial arch wire are applied on the upper cuspids and ligatures are placed in the frontal region. The bilateral springs are still opened dorsally. By this combination, immobilization and a downward pressure on the front fragment are accomplished.

In patients with malocclusions, an activator made in two parts is used (Fig. 2). The apparatus, which stimulates the occlusion, is used nights and as much as possible during the day.

For prophylactic reasons it is important to inspect prostheses, especially lower free end saddles.

In instances of total extraction, a temporary prosthesis should be made immediately in order that the correct bite, and thereby the correct position of the condyle, can be maintained.

Vindelgatan 11 A, Borås, Sweden

Biologic principles in correction of occlusal disharmonies

Balint Orban. *J.Pros.Den.* 6:637-641 Sept. 1956

Pathologic tissue changes occur in the periodontium on both the tension and pressure sides when forces in excess of the physiologic tolerance of the tissues are exerted on the teeth.

Structure and function are interdependent factors in tissue health. A beautiful functional relationship exists between the tooth, alveolar bone, periodontal membrane and the fibrous and epithelial attachment of the gingivae. The delicate mechanism of tissue reaction to changes in function can be demonstrated by the structures of the periodontium.

A harmonious relationship between the teeth, and between teeth on one side and the temporomandibular joint and the muscles on the other side, assures optimal function and optimal maintenance of the supporting tissues.

Though the range of adaptability of living tissues is wide under normal conditions, it can be curtailed by intrinsic and extrinsic factors. The aim of good dentistry is to create optimal functional conditions in order to give to the supporting dental tissues the optimal chance of maintenance or recovery under pathologic conditions.

Elimination of all known factors impairing the adaptability of the supporting tissues makes use of local periodontal treatment, improvement of the dietary regime, elimination of systemic factors, elimination of occlusal imbalance by grinding, occlusal reconstruction, splinting, or a combination of all these and possibly other procedures.

30 North Michigan, Chicago, Ill.

▼ Inlays and fillings

Are excavators obsolete?

(L'excavateur est-il mort?)

A. Marmasse. *Actual.odontostomat.,Paris* 10:431-435 Sept.-Dec. 1956

Some dentists experiment with suprasonic and ultrasonic instruments having a frequency of or above 30 kilocycles. In the near future, instruments with a frequency of more than 60 kilocycles probably will be tried.

Does this mean that excavators (hatchet, hoe and spoon) already have become obsolete, or that these instruments will be antiquated before long? Many dentists, among them the author, do not think so.

An experienced operator is able to complete an average cavity preparation with the customary instruments such as excavators, chisels, burs, carborundum stones and diamond disks, in less time than is required for local anesthesia, and with a minimum of discomfort to the patient.

In comparison with rose-headed (round) burs, excavators have the following advantages: (1) they obtain the required outline form quickly whereas burs drill a round hole; (2) excavators stay cleaner than burs during removal of the remaining carious dentin; (3) excavators permit precise finishing of enamel walls whereas with burs this work has to be done more or less by

"touch and feel"; (4) excavators can be cleaned easily because little clogging occurs, and (5) excavators remove carious dentin without injury to healthy tissue whereas with rose-headed burs healthy dentin often is sacrificed.

Excavators last a long time. After several hundred cavity preparations, these instruments still are in usable condition.

Although there will always be a difference of opinion as to what types of instruments are preferable for cavity preparation, the author feels that even after general acceptance of ultrasonics in dentistry, the excavator will maintain its rightful place in dental practice.

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Invisible Class III gold foil restorations

Alexander Jeffery. *J.A.D.A.* 54:1-6 Jan. 1957

After a local anesthetic has been administered, the rubber dam is adjusted to include a sufficient number of teeth so that a separator can be secured firmly to the teeth with modeling compound. Several separators of similar size should be available. The slightly worn ones will be more easily adjusted to the teeth.

Almost the entire operation is accomplished with ease by working from behind the chair using indirect vision in a mirror. The cavity preparation is started by breaking down the weakened enamel over the carious region with a small bevel-edged hatchet type cutting instrument no. 2 (10-6-14-L). A small carbide inverted cone bur is used to cut the enamel at the linguogingival angle and to open the cavity gingivally and lingually. A medium size bevel-edged enamel hatchet no. 4 (15-8-14-L) is used to form an acute linguogingival angle well out toward the cingulum, and the beveled cutting side of the instrument is used to form the lingual wall. The gingival wall is extended as far gingivally as possible and toward the labiogingival angle of the tooth with a small inverted cone bur.

A convenience pit is formed in the labioaxiogingival angle with a very small inverted cone bur. A contra-angle instrument no. 5 (9-7-23-16-L) is used to form the gingival and labial walls at a slightly acute angle to the axial wall. The linguoaxiogingival angle is formed with a bayonet type angle former no. 9 (6-80-2-2-L). The incisal retention region is formed with a contra-angle hatchet no. 10 (3-2-32). The gingival enamel is planed with instrument no. 7 (9-7-23-16). The labial, labiogingival and labioincisal enamel are planed with instrument no. 6 (9-7-23-16-R). All enamel margins are slightly beveled with a thin contra-bevel chisel no. 11 (10-15-3).

The gold foil filling is started by condensing one or two pellets of foil (size 128) in the labioaxiogingival convenience pit with a small mon-angle condenser no. 12. A pellet of gold (size 64) is placed in the labiogingival angle and attached to the previously placed gold. A portion is allowed to extend over the margin. Another pellet of gold is placed over this first pellet and allowed to extend over the labiogingival margin. The gold is then placed across the gingival wall with a slightly larger condenser no. 13 and into the linguogingival angle with a bayonet type condenser no. 16. The gold extending over the margin is condensed with a no. 15 foot condenser.

The gold is then placed against the labial wall and over the enamel margin with a no. 14 mon-angle condenser. The bulk of the gold is condensed toward the gingival margin with the mon-angle condenser no. 13. The gold is condensed into the linguoaxial line angle and against the lingual wall with the bayonet condensers no. 16, 17 and 18. The gold is placed in the incisal retention area with hand condensers no. 20 or 21, and condensed with instruments no. 16, 17 and 18. Gold is then placed from the incisal margin toward the gingival margin over the labial margin and attached to the previously placed gold from the lingual aspect with instrument no. 14 and from the incisal aspect with instrument no. 15. The gold is condensed against the enamel by being wedged against the proximal tooth. The gold is then condensed against the incisal enamel with condenser no. 18, and over the linguogingival margins with condenser no. 19.

The finishing is accomplished easily and quickly.

This type of restoration maintains the beauty of the human tooth with the most permanent filling material. It reduces the percentage of tragic losses of the incisal angle, because it retains the incisolabial tooth structure which affords support to the incisal angle.

Research on dental amalgam and its application in practice

Ralph W. Phillips. *J.A.D.A.* 54:309-318 March 1957

The intricacies of amalgam and its prominent role as the most widely used restorative material still make it a fertile field for investigation. Basic studies related to adaptation, phase changes during setting and electrical conductivity may lead eventually to significant clinical advances. For more immediate direct application, the following points can be enumerated:

1. Use of small grained alloys permits better handling characteristics, smoother surface and a stronger alloy.

2. There is now information on the exact relationship of residual mercury to compressive strength. Loss in strength is extreme at the high levels often found in the clinical restoration, particularly at the marginal region. Excess mercury can be minimized by using the manufacturer's mercury-alloy ratio, triturating thoroughly, condensing with adequate pressure and by not using amalgam that has partially hardened.

3. Laboratory and clinical evidence indicates a danger from under-trituration of amalgam; the strength is low, fracture and fraying of the margins may result, and tarnish will be greater. It is better to err on the side of too much rather than too little trituration.

4. Moisture contamination remains a common cause of failure. Contamination by saliva or mulling produces severe expansion and sharp reduction in strength. The nonzinc alloys seem to possess properties that are comparable to those of zinc-containing alloys. Whether they will be more or less resistant to tarnish is yet to be determined.

5. The resistance of any amalgam restoration to biting stress is low during the first few hours after insertion. The patient must be warned against accidental or intentional biting forces during that time.

6. Research with radioactive isotopes indicates that although perfect adaptation to the cavity wall is never attained with any restorative material, amalgam is inferior to none.

The amalgam restoration remains a fascinating and fertile area for research. As with all dental materials, it is susceptible to many manipulative variables. Its clinical success is dependent on meticulous attention to detail.

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Factors influencing finish of silver amalgam

John F. Mosteller. *J.Kentucky D.A.* 9:5-12 Jan. 1957

Factors influencing the finish of silver amalgam restorations include the following: cavity preparation, cavity base or seal, selection of alloy, purity of mercury, mercury alloy ratio, mixing time, mulling and contamination, homogeneity of portions placed in the cavity, packing pressure, overpacking, proximity to dissimilar metals, carving, polishing and subsequent oral hygiene.

A satisfactory polishing procedure involves the following steps:

1. For smoothing margins, fine grain stones or medium coarse grit sandpaper disks are used. The work progresses by moving from one tooth to another. Each type of instrument is used as long as possible with no loss of time in changing.

2. Short rosebud dull finishing burs are used over all occlusal surfaces.

3. A long, flame-shaped finishing bur is used in all interproximal regions.

4. Tripoli is used with the brush moving from one restoration to another rapidly, to avoid overheating. Sulci disks or Italian pumice may be used.

5. For the final polish, Amalgloss moistened in a cup is used. The work proceeds from one tooth to another, and the cup is left in contact with each surface just a few seconds at a time. If too much heat is generated, it will result in a dull finish on the restoration within a few hours, and early tarnish with corrosion later. Tin oxide is a good polishing agent. Regardless of the polishing procedure used, the underlayer of amalgam must be exposed and have a smooth surface before a mirrorlike finish can be obtained.

If only the occlusal surfaces of multiple-surface restorations are polished, a galvanic reaction will be set up which causes tarnish to appear much earlier than would otherwise occur.

104 St. Joseph Street, Mobile, Ala.

Periodontics and endodontics

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Periodontics

Prevention of periodontal injuries through conservative procedures

(Vermeidung parodontaler Schäden durch konservierende Massnahmen)

Th. Spreter von Kreudenstein. *Deut.Zahnärztebl.* 10:37-43 Jan. 22, 1956

By utilization of recently developed photographic technics combined with Zeiss' surgical microscope, it is now possible to make useful detailed photographs of living objects in numerous enlargements. In these procedures, either daylight color film or fine-grained black and white film can be used. This method can be recommended for photographic reproductions of the regions of the gingival margin and of the capillary network. The enlargements permit a differentiation between the typical form of gingivitis and that of other gingival alterations; determination of the effect of drugs on the capillary vessels; a correct diagnosis of gingival alterations, and the selection of the treatment.

When the condition of the capillary system of the gingival margin is examined in enlarged micrograms, it can be established whether the abnormal changes occurring in the capillary system correspond to the known systematologic picture of gingivitis marginalis suppurativa or to that of different forms of gingivitis (catarrhal, expulsive, interstitial or ulcerative). Between the symptoms of the chronic marginal gingivitis and those of an acute inflammatory alteration of the mucous membrane, definitive differences exist which now are clearly recognizable in the enlargements of the micrograms. In an inflammatory condition caused by aphthous stomatitis, the capillary vessels are in regular arrangement and in uniform distribution. In chronic marginal gingivitis, however, irregularity in form and arrangement and variation in distribution can be observed. These deviations from the norm are most intense in the gingival margins which usually are dark red ("red gingivitis"). All capillary tubules are abnormally widened and lengthened. The diameter of these vessels, simultaneously in different places, reaches 0.05 mm., and at the center of the inflammation often reaches 0.08 mm.

These abnormally enlarged capillaries are unable to react to mechanical irritation or to the vasoconstrictor or vasodilator effects of drugs such as epinephrine, histamine or hydrocortisone. Such enlarged capillaries, refractory to irritation,

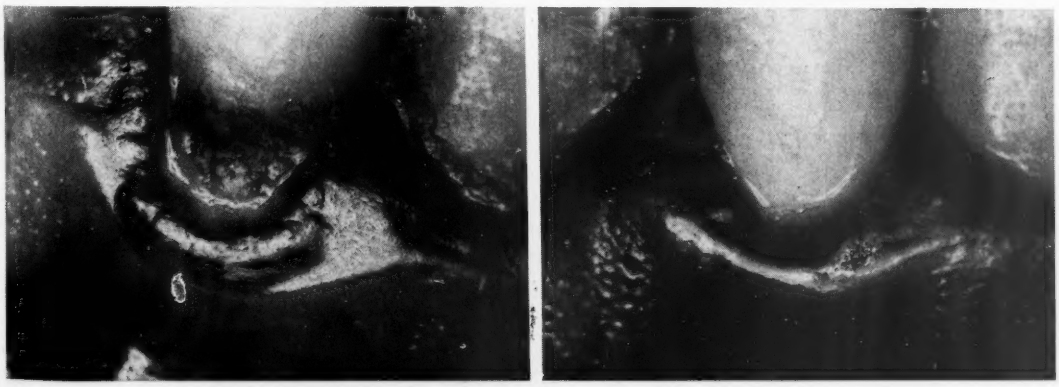

Figure 1 Left: Acute marginal gingivitis: swelling and reddening of gingival margins, and calculus formation. Right: Four days after elimination of calculus

Figure 2 Left: Aphthous stomatitis: inflammatory changes of the mucous membrane, swelling of the interdental papilla and regularly distributed enlarged capillaries

Figure 3 Above: Chronic marginal gingivitis: irregularly distributed capillaries

Figure 4 Above: Chronic marginal gingivitis: neither calculus nor concretion formation, widened and irregularly distributed capillaries

Figure 5 Right: Four days after a single and short application with diluted phenol: normalization in the gingival region

can be treated therapeutically only with astringent or caustic drugs.

In instances of chronic marginal gingivitis, accompanied by slight swellings and mild reddening of the gingival margins without calculus formation or resorption of the alveolar process, a single and short local application of diluted phenol obtains improvement. Macroscopically, a superficial scar formation is visible, appearing as a fine gray film. Microscopically, although some enlargements of the capillaries still are present, it can be observed that the diameter of the greatest enlargement is only 0.02 mm. One week later, the number of visible capillaries (in each surface unit) is decreased and neither swelling nor discoloration is observable. The condition becomes normal.

The success of such a simple conservative treatment depends in each instance on (1) the effectiveness of the cauterant to reach deeper strata; (2) the individual reaction of the tissues to the caustic effect, and (3) prolongation or repetition of the caustic application.

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Examinations of the bacterial flora present in inflammatory periodontal disease

(Bakteriologische Untersuchungen bei entzündlichen Parodontopathien)

Ulrich Berger. *Deut.zahnärztl.Zschr.* 12:401-410 Feb. 15, 1957

At the Dental Clinic and Polyclinic of the University of Hamburg, Germany, the typical flora present in inflammatory periodontal disease has been examined bacteriologically.

The following conclusions were reached: (1) in periodontosis, the causative bacterial flora consists of a "fusospirochetal symbiosis"; (2) in periodontitis, pyogenic cocci play no important part in the development of deep or superficial lesions or in the formation of dental granulomas at or near the apex of the tooth; (3) in all inflammatory periodontal diseases, the so-called "spirillosis theory," according to which these conditions are caused by infection with one type of Spirilleae (Pseudomonadacea), has no scientific basis, and (4) in inflammatory processes in the periodontal membrane, Spirochaetales and Fusobacteria play an important part in the development of the pathologic changes.

Spirochaetales possess a certain diffusion factor which in the hyalinization of serous exudates activates indirectly the Fusobacteria. The growth of the Spirochaetales is stimulated, permitting a direct invasion of these slender, spiral-shaped bacteria into the periodontal region. The stages of such an invasion can be demonstrated histologically. It starts as an acute or chronic ulceration in the gingival margin. The periodontal fibers are attacked later and destroyed gradually. Pus pockets are produced irregularly and rapidly, first shallow but gaining quickly in depth.

Dental focal infection which has been reported often as an important causative factor in the development of periodontal disease, seems to be overrated.

Martinistrasse 52, Hamburg 20, Germany

The results obtained with an unembellished gingivectomy technic in a clinical study in humans

Irving Glickman. *J.Periodont.* 27:247-255 Oct. 1956

Gingivectomy is a direct, unembellished method for eliminating periodontal pockets. It consists of two stages: (1) resectioning the diseased pocket wall and (2) removing calculus and smoothing the tooth surface, in one operation, followed by the application of a periodontal pack. Preliminary or adjunctive procedures or the use of drugs is not required.

A clinical study is reported in which 250 patients with chronic periodontal disease of varied severity were treated by unembellished gingivectomy. In 200 patients the mouth was divided into quadrants and treated singly at weekly intervals. In 50 patients a full mouth gingivectomy was performed in one operation. The patients consisted of men and women from 18 to 63 years of age.

Each gingivectomy, whether of a quadrant or the entire mouth, was performed as a complete operation. The Kirkland gingivectomy technic, with some modification, was employed. Resection

of the gingiva was followed immediately by removal of the calculus and smoothing of the root without an intervening "waiting" period. No drugs were used nor was there any pretreatment scaling.

The following clinical criteria were used in evaluating the effect of the treatment: effectiveness in restoring gingival health and eradicating periodontal pockets; duration of the persistence of sulcus depth and gingival health; frequency and extent of complications; posttreatment root sensitivity, and posttreatment esthetics combined with gingival health.

It was concluded that the successful eradication of periodontal pockets and the restoration of esthetically and functionally desirable gingival contours can ordinarily be achieved without the use of preliminary treatments or adjunctive "plastic" procedures.

Effects of cortisone in treatment of gingivitis, locally and systemically administered, with and without other forms of treatment

Emile T. Fisher. *Northwest.Univ.Bul.* 57:13-20 Dec. 3, 1956

A research project was undertaken in an effort to establish the role that cortisone and hydrocortisone may assume in the field of periodontics and, more specifically, in the treatment of chronically inflamed gingiva.

One hundred and twenty-five patients were selected and were divided into five groups of 25 patients each, as follows: Group 1 were administered cortisone systemically by oral ingestion as the only means of therapy; Group 2 were administered cortisone systemically by oral ingestion in conjunction with scaling, subgingival curettage, and instructions in home treatment; Group 3 were administered hydrocortisone acetate ointment topically as the only means of therapy; Group 4 were administered hydrocortisone ointment topically in conjunction with scaling, subgingival curettage and instructions in home treatment, and Group 5, the control group, received no drugs and were treated with scaling, subgingival curettage and received instructions in home treatment.

The following conclusions were reached:

1. Cortisone acetate systemically administered, and hydrocortisone acetate dental ointment, topically applied, were apparently effective in reducing chronic inflammation of the gingival tissues.

2. The histopathologic study of the biopsied tissue in the drug-receiving groups supports the conclusion drawn from clinical evaluation that cortisone and hydrocortisone are effective in reducing chronic inflammation of the gingival tissues.

3. The use of these agents in the treatment of patients with periodontal disease is palliative, and they must never be substituted for standard measures of supportive treatment.

4. Cortisone and hydrocortisone appeared to be most effective when administered at least seven days prior to scaling and subgingival curettage. This conclusion was reached when evaluation of experimental evidence showed that the tissues of patients in Groups 1 and 3 appeared to heal more quickly.

This paper is a summary of a thesis submitted in partial fulfillment of the requirements of Northwestern University for the degree of Master of Science in Dentistry.

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Changes of the water balance in the human organism: their effect on periodontal tissues
(Verschiebungen im Wasserhaushalt des menschlichen Organismus: ihre Wirkungen auf die parodontalen Gewebe)

H. J. Kutzleb. *Deut.zahnärztl.Zschr.* 12:411-415 Feb. 15, 1957

The activity of the kidneys determines the condition of the water balance in human and animal organisms. In renal diseases, leading to uremia, tissue changes occur which frequently cause ulcerative uremic stomatitis. Gradual alterations in periodontal tissues accompany most diseases of the kidney in which an overproduction of acids causes metabolic disturbances. Besides calcium-phosphorus (vitamin D) deficiency, these disturbances of the metabolism are causative factors in the development of osteomalacia.

Mach and Rütishauer called the structural changes occurring in renal diseases a "morphologic calcium deficiency in acidic environment."

Degenerative lesions of renal tubules are characterized by noninflammatory edema, albuminuria and decreased serum albumin (the nephrotic syndrome) or changes in the protein formation of the bones (osteoporosis).

The presence of edemas in periodontal tissues, caused by renal disorders, decreases the resistance to infection. As a reaction to bacterial invasion, inflammatory edemas often appear in the periodontal tissue.

Osteomalacic and osteoporotic bones are unable to function normally. The increased masticatory pressure may cause the development of traumatic edemas in the periodontal tissue.

Occasionally, a compensatory process, due to internal causes, produces an excessive scar formation in the periodontal region. Parts of the oral mucous membrane may be replaced by cicatricial tissue. The spontaneous appearance of newly developed gingival tissue permits a favorable prognosis in periodontal disease.

Markt 33, Neuss, Germany

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Endodontics

Pulpotomy (Die Vitalamputation)

Benedikt Maeglin. *Österr.Zschr.Stomat.* 53:299-305 June 1956

In the past, there have been many instances in which child patients have lost teeth which might have been saved by a pulpotomy, that is, a surgical removal of the coronal portion of the pulp performed in such a manner as to preserve the vitality of the pulp tissue remaining in the root canals. This method, therefore, can be used successfully only for teeth with a reasonably healthy pulp and an adequate blood supply.

Pulpotomy is indicated in instances in which the following conditions are present: (1) an extensive exposure of the pulp, including the entire bulbous coronal portion, projecting beyond the apex of the hard tooth structure in a pedunculated form; (2) a previously occurring mild hemorrhage; (3) an exposure of the pulp in fractured teeth, especially incisors, for more than 48 hours; (4) an injury to the root ends of teeth which still are in the developmental stage; (5) a minute pulp exposure which otherwise might be treated with pulp capping, and (6) an exposed pulp in which there is evidence of vitality and adequate red blood supply (degenerated or necrotic pulp does not produce these symptoms).

Based on previously published reports on indications for and technic of pulpotomy and on the statistical data reported by Zander (71 per cent success), by Castagnola (81 per cent), by von Ferner (88 per cent) and by Demeritt (90 per cent), the author concludes that pulpotomy will obtain favorable results in the majority of instances.

The technic of pulpotomy is comparatively simple, but this operation must be performed under aseptic conditions. A rubber dam should be used, and a sterilizing method similar to that employed in customary endodontic treatment.

The use of pulpotomy in preference to the devitalization method has significant advantages. There is no danger of traumatic effect to the periapical tissue or to the general body system from poisonous devitalizing drugs. After pulpotomy, the possibility still exists that uncalcified root ends may become completely developed. If the local anesthesia is sufficiently deep, the entire surgical procedure can be completed in one sitting.

Further research work on pulpotomy is necessary in order to evaluate properly its role in dentistry. The surgical removal of parts of the pulp appears to be especially indicated in instances in which severely decayed multirooted teeth are present or in neurasthenic patients who are known to be difficult subjects for root canal treatment.

Pulpotomy is simple, rational and economical, and can be performed by the average dental practitioner with reasonable facility and safety. It is a biologic therapy which does not injure the periapical tissue and permits preservation of the pulp vitality.

Spalenring 91, Basel, Switzerland

Basic science

▼

Physiology

Variations in nerve distributions of the maxillary teeth

William Lester McDaniel. *J.D.Res.* 35:916-921 Dec. 1956

Clinicians have observed considerable variability in the anesthetic effects of procaine hydrochloride when injected by conduction or infiltration. Fifty maxillas were secured from the anatomy department of the Northwestern University Medical School, decalcified and dissected to trace the branches from the maxillary and infraorbital nerves. Many variations were found in the origin, course and distribution of the maxillary nerves in the teeth.

In 48 per cent of the 50 maxillas dissected, the maxillary teeth were supplied by branches from a dental plexus.

The posterior dental nerves may consist of one, two or three branches. The middle dental nerve was present in 17 (34 per cent) of the specimens. The anterior dental nerve was present in all specimens, and in many instances when the middle dental nerve was absent, the anterior dental nerve had a secondary branch which supplied the bicuspid region.

The posterior dental nerve was traced to the bicuspid region in 13 (26 per cent) of the specimens.

The anterior dental nerve was traced to the bicuspid region in 6 (12 per cent) of the dissections, where only single branches were present. In 18 (36 per cent) of the specimens where the middle dental nerve was absent, a secondary branch of the anterior nerve supplied the bicuspid region.

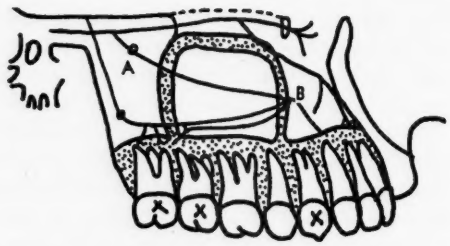

Figure 1 Unusual middle dental nerve originating in pterygopalatine fossa above posterior dental nerve. Point B shows an anastomosis between the three maxillary dental nerves in what is believed to be a sensory ganglion

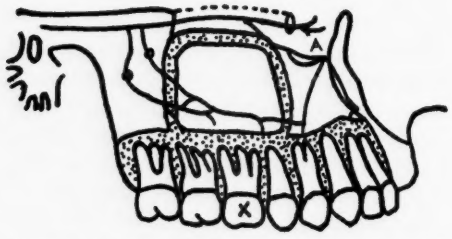

Figure 2 A nerve plexus between two posterior dental nerves and an anterior dental nerve with secondary branch to bicuspid region. The middle dental nerve is absent. Point A is believed to represent a sensory ganglion

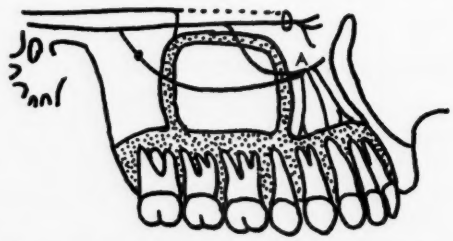

Figure 3 Single posterior dental nerve in a plexus with an anterior dental nerve with secondary branch to bicuspid region. Sensory ganglion believed to be present at point A above root of first bicuspid

Vague maxillary pain in the bicuspid region may be explained by maxillary sinus infection which could cause pressure or irritation to the superior dental nerve.

Lack of uniformity in procaine hydrochloride

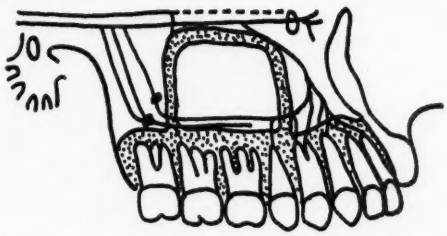

Figure 4 Nerve plexus composed of three posterior dental nerves and an anterior dental nerve with secondary branch to the bicuspid region. Lines drawn into the teeth indicate that these nerves were traced to these teeth

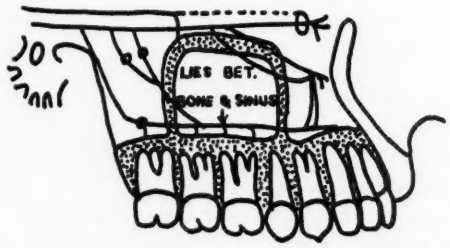

Figure 5 Plexus between three posterior dental nerves and the middle and anterior dental nerves

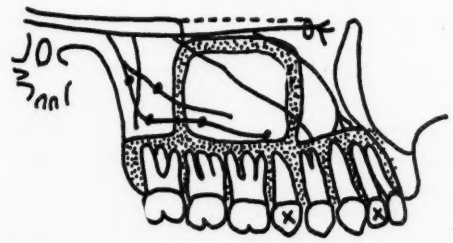

Figure 6 Generally accepted innervation of the maxillary teeth. Note independent minor branch to tuberosity region and probable anastomoses between the posterior and middle dental nerves. One of the posterior nerves and the middle dental nerve lie between the bone and the maxillary sinus membrane for a part of their course

anesthesia by conduction or infiltration may be explained by variations in the anatomic distribution of the maxillary nerve.

The posterior superior dental nerve was found to be a single nerve in 45 per cent of the dissected specimens, as indicated by the earlier anatomists, whereas 55 per cent of the specimens revealed multiple nerve branches, which observation agrees with those of the later anatomists. The greatest variation appears in the formation of the middle superior dental nerve, with only 30 per cent of the specimens following the usual description.

The innervation of the upper bicuspids noted in the dissections has been partially substantiated clinically by the writer. In 15 patients where the first or second upper bicuspids were tender to percussion and the patient complained of acute symptoms, the teeth were extracted painlessly without the usual buccal infiltration of procaine hydrochloride. It was found that either an infraorbital or zygomatic block injection, or both, gave complete anesthesia to the teeth. The infraorbital injection gave complete anesthesia to the first bicuspid more frequently than to the second bicuspid.

Northwestern University Dental School, Chicago, Ill.

Studies on the influence of dental treatment on the volume of the spleen

Yoshio Hayashi. *Shikwa Gakuho* 56:8-13 Sept. 1956

The changes of the spleen in the dog and the rabbit during dental treatment were observed, with the following results:

1. The spleen contracts during dental treatment.

2. The spleen is influenced more by the grinding of hard tissues of the teeth than by cutting of the pulp.

3. The contraction of the spleen during dental treatment is provoked by the splanchnic nerve to which the impulse is conducted. The vagus nerve exerts no specific action on the spleen.

4. The contraction of the spleen during dental treatment is affected by the blood pressure.

5. The pathway along which the impulse is conducted during dental treatment is as follows: trigeminus nerve, medulla oblongata, midbrain, diencephalon, cerebral cortex, diencephalon, midbrain, medulla oblongata, spinal cord, splanchnic nerve and spleen.

6. In the event of the removal of the cerebral cortex, the destruction of the diencephalon, amputation of the midbrain and general anesthesia, the spleen contracts by the sciatic nerve but shows no response to dental treatment. Dental treatment differs from pure stimulation so far as the sense of pain is concerned.

▼

Miscellaneous

Variability of the form of maxillary permanent incisors

D. H. Goose. *J.D.Res.* 35:902-908 Dec. 1956

A common clinical observation is that upper incisor teeth differ considerably in form from one person to another, and also between racial types, but little data have been accumulated on this subject. A brief study of incisor tooth form was undertaken with the object of stating, with some precision, these differences.

A new method of measuring the shape and size of maxillary first permanent incisors was devised by using the following: (1) the labial surface area; (2) tooth width index, and (3) the taper (angle at which the mesial and distal surfaces converge).

A sample of 50 teeth extracted from Englishmen was obtained from the Birmingham Dental Hospital, and measured. The teeth were not separated for sex or side of the mouth of the person from whom they had been extracted; they were taken at random and considered to be sufficiently representative.

The results show considerable differences when compared with the teeth of other racial groups described in dental literature, but showed considerable similarities with the teeth of Saxons studied by the author.

The form of these teeth is little affected by environment, but is the result primarily of heredity and is therefore a suitable characteristic for genetic analysis.

The method can be extended to other teeth by means of coordinate transformations.

It is noted that the Bantu, American Indians and white Americans have considerably wider (relative to crown height) teeth than the English or Saxon groups. Teeth of the latter resemble those of the Japanese. Teeth of the English and Anglo-Saxon are straight sided compared to teeth of the other groups. Teeth from Saxons and modern English peoples are quite similar in shape, and their surface areas are closely comparable. It appears that, over a period of 50 to 60 generations, incisor form and size have not altered materially in the region.

Northampton, England

▼

Biochemistry

The effect of sodium N-lauroyl sarcosinate and of sodium dehydroacetate on the enzymes of the gastrointestinal tract

Charles W. Bauer and Edward Francis La Sala. *J.Am.Pharm.A* (*Scien. Ed.*) 45:675-678 Oct. 1956

Current advertising for "antienzyme" tooth pastes states that these agents inhibit acid-producing enzymes; but in that advertising and in the literature nothing has been reported about the effect of these agents on the physiologically important enzymes of the mouth and of the gastrointestinal tract.

An investigation was undertaken to determine the effect of two highly advertised "antienzymes" —sodium N-lauroyl sarcosinate and sodium dehydroacetate—on the better known enzymes of

Table *Summary of the effect of sodium dehydroacetate and of sodium N-lauroyl sarcosinate on six digestive enzymes*

Enzymes	Sodium dehydroacetate	Sodium N-lauroyl sarcosinate
Salivary amylase	No effect	Inhibition
Rennin	No effect	No effect
Pepsin	No effect	No effect
Pancreatic amylase	No effect	Inhibition
Pancreatic trypsin	No effect	No effect
Pancreatic lipase	Stimulation	Retardation

the gastrointestinal tract. No attempt was made to evaluate the usefulness of "antienzyme" tooth pastes in the prevention of dental caries.

The effect of the two compounds on six of the digestive enzymes investigated is summarized in the table.

The use of antienzyme tooth pastes containing either sodium dehydroacetate or sodium N-lauroyl sarcosinate does not cause any ill effects on the physiologically important enzymes of the digestive tract.

▼ Histology

Tooth mobility in rhesus monkeys

(Untersuchungen über die Zahnbeweglichkeit beim Rhesusaffen)

R. J. Hüttner, New York. *Schweiz.Mschr.Zahnhk.* 66:856 Sept. 1956

Recent studies of tooth mobility in rhesus monkeys were carried out to determine the histologic changes occurring after orthodontic treatment (tooth elongation and rotation), and the difference in these histologic changes in both the vital and nonvital teeth after endodontic and orthodontic treatments.

Eight rhesus monkeys, from three to five years old, were used. This age corresponds to the human age of from 12 to 18 years.

After the animals were fed a normal human diet, orthodontic treatment was used to correct irregularities of the teeth and malocclusions. Customary endodontic treatment later was carried out with complete sterilization of the root canals.

Microscopic examinations of tooth specimens revealed that the after-effects of orthodontic treatment were more severe in teeth with vital pulps than in those that were nonvital.

The conclusion was that although certain differences were observed in the tooth mobility of vital and nonvital teeth after orthodontic treatment, these differences were insignificant histologically.

Experimental obstructive adenitis in the mouse

S. N. Bhaskar, T. E. Bolden and J. P. Weinmann. *J.D.Res.* 35:852-862 Dec. 1956

To study the relationship of duct obstruction to mucoceles and adenitis, the right submaxillary ducts of 31 six month old female mice were ligated. The animals were sacrificed at 1, 2 and 3 weeks and at 1, 2½, 3, 4, 4½, 5, 5½, 7, 9 and 9½ months postoperatively. Glands from the right side were fixed in 10 per cent Formalin, embedded in paraffin, sectioned serially, and stained with hematoxylin and eosin, van Gieson's solution, Mayer's mucicarmine, and erythrosin-safranine. The glands from the right side were treated similarly but were not cut serially.

The following conclusions were reached:

1. Lesions resembling human mucoceles did not result from duct obstruction.

2. Ligation by itself did not cause adenitis.

3. Changes in the gland were comparable to those that follow obstruction of the salivary ducts in man.

4. Ductal cells are the source of new ducts and of nonfunctioning or partially active acinar cells.

5. After ligation, the secretory cells degenerate or show loss of secretory granules and vacuoles and finally appear as cuboidal or polyhedral cells.

6. Ligation leads to an increase in the number of ducts and to interstitial fibrosis.

University of Illinois College of Dentistry, Chicago, Ill.

Electron microscopy of dental tissues by use of the replica method

Shosaburo Takuma. *Shikwa Gakuho* 56:1-3 Dec. 1956

This report summarizes the findings obtained, chiefly during the period from 1949 to 1953, as part of a continuing electron microscopic study of dental tissues. About 520 teeth were examined. Observations were made of their outer surfaces, polished surfaces and mechanically cleft surfaces

which were etched with acid. The findings were as follows:

Enamel

1. The following structures are observable on the outer surface of the enamel: perikymata, enamel rod end, small depression, pit, and stratified and reticular structure. These structures may be modified by secondary changes, such as traumatic and carious changes, and show various complicated appearances.

2. The rod ends appear as depressions of various shapes. There is an almost fixed relation between their state of depression and their appearance from directly above.

3. The perikymata near the cervical border are arranged in rows divided by furrows of a slightly slanting V shape; those which are far from the cervical border are arranged with a shallow U-shaped furrow between the rows. The larger the distance between the perikymata and the cervical border the wider become the spaces.

4. Though perikymata run across the tooth crown, generally in parallel lines, frequently they show a disordered arrangement in the cervical region where small depressions and pits are observable.

5. With advancing age, the rod ends and the perikymata gradually disappear because of attrition and abrasion, and scratches, running in irregular directions, begin to appear.

6. The outer surface of normal enamel, both in the rod and the interrod regions, is calcified with fine particles of a uniform size.

7. On the outer surface of abnormally developed enamel gross calcified particles or particles of nonuniform sizes can be observed, deformations in rod ends and defects of tooth substance.

8. There seems to be a slight difference in the degree of calcification between the outer and the inner layers of enamel; the former is more calcified in normal enamel whereas the latter is more calcified in mottled enamel.

9. Most of the cross sections of enamel prisms show an arcade form; a few pentagonal, polygonal and round forms are observed.

10. The enamel contains considerable organic substance even after tooth eruption. The organic substance is most densely distributed in the sheath region, next in the interprismatic region, and least in the core.

11. The inorganic elements of the prism core generally run parallel to the long axis of the prism. Those of the interprismatic region are arranged perpendicularly or obliquely to the axis of the prism.

Dentin

12. The size of the inorganic elements in dentin is much smaller than the size of the inorganic elements in enamel.

13. Frequently an especially highly calcified region is found around the dentinal tubule. This region has a stronger resistance to friction, but a weaker resistance to acid, than any other region.

14. In the dentinal matrix are many collagen fibers which often appear especially numerous in the inner wall of the dentinal tubule.

15. A fiber different from the collagen fiber exists in the inner wall of the dentinal tubule.

16. The dentinal fiber seems to consist of a bundle of fine fibrils wrapped in a thin capsule.

Cementum

17. An extremely large quantity of collagen fibers is observable in the cementum.

18. The lamellar structure of the cementum seems to be caused by the alternating arrangement of groups of collagen fibers which run in different directions.

Department of Pathology, Tokyo Dental College, Tokyo, Japan

The development of the fibres of the dentine matrix

N. B. B. Symons. *Brit.D.J.* 101:255-262
Oct. 16, 1956

The presence of cells in the odontoblastic layer of the developing tooth, morphologically distinct from the odontoblasts, was first clearly described by Jasswoin (1924); he called them "radial cells." The existence of these cells has been confirmed by Symons (1955), who used undecalcified Formalin-fixed materials. The radial cells can

be distinguished clearly in material which has been decalcified, provided that the material has been fixed in chilled 40 per cent Formalin. With the use of both undecalcified and decalcified rat material, further observations are reported on the relations of the radial cells and on the fibers of Korff.

The development of the fibers of the dentinal matrix, and of the odontoblastic layer, were studied in the teeth of rats from two to seven days after birth.

Weidenreich's theory of a dual origin of the fibers of the dentinal matrix, namely, the mantle and circumpulpal dentin, is supported.

The fibers of the mantle dentin are formed by Korff's fibers; those of the circumpulpal dentin, though partly derived from Korff's fibers, are produced largely by the radial cells. It is suggested that after the mantle dentin is formed, Korff's fibers pass through the circumpulpal dentin without branching or spreading out.

Both mantle and circumpulpal dentin have a typical arrangement of the odontoblastic layer associated with their formation. The odontoblastic layer contains radial cells at all stages of dentin formation.

Dental School, University of St. Andrews, Dundee, Scotland

Studies on mineralized dental tissues. IX. A microradiographic study of the mineralization of developing enamel

Bengt Engfeldt and Erna Hammarlund-Essler. *Acta odont.scandinav.* 14:273-289 Nov. 1956

Thin serial ground sections of deciduous tooth germs from the mandibles of newborn infants were examined by microroentgenography. Various stages of the development of the enamel were studied.

The enamel nearest the dentin rapidly attains a high mineral content. In the enamel that is formed subsequently, the deposition of calcium salts occurs more slowly. The degree of mineralization in the inner enamel seems to increase, however, before the final thickness of the enamel matrix is attained. This increase in the mineral content is first observed at the extreme incisal or occlusal parts of the dentinoenamel junction. The mineralization continues faster on the lingual side than on the buccal side, and consequently the course of the final mineralization of the enamel is neither parallel nor perpendicular to the incremental lines.

The mineral content increases to a high level in the external enamel before the underlying enamel has reached the same stage of mineralization.

Department of Pathology, University of Uppsala, Uppsala, Sweden

▼ Bacteriology

Effect of sodium fluoride on oral lactobacilli isolated from the rat

T. Shiota. *J.D.Res.* 35:939-946 Dec. 1956

When varying concentrations of sodium fluoride were used to inhibit the growth of 20 strains each of homofermentative and heterofermentative oral lactobacilli isolated from rats, three groups of lactobacilli were distinguishable by the characteristic shapes of their growth inhibition curves. The homofermentative lactobacilli were divided into two groups; in one, typified by strain 84 AT, a monomolecular reaction was observed, and in a second group, illustrated by strain pp3, a resistance to sodium fluoride through 50 ppm was noted. The third group, represented by strain 20, was composed of heterofermentative lactobacilli.

The growth rate of strain 84 AT was reduced by 50, 100, 200 and 300 ppm sodium fluoride. At concentrations of 400 or 500 ppm, there was an apparent lag after which the rate of growth was about the same as that at 300 ppm.

With strains pp3 and 20, rates of growth were decreased only slightly through 500 ppm sodium fluoride.

As the pH of the growth medium was lowered from pH 8 through pH 4, the inhibitory action of sodium fluoride against strains 84 AT, pp3 and 20 was increased.

In bactericidal experiments, 99.9 per cent of the cells of strain 84 AT were killed when they

were exposed to 600 ppm sodium fluoride for two hours at pH 6.9. The bactericidal effect of sodium fluoride was increased as the pH of the testing mixture was decreased from pH 8 to pH 4.

National Institute of Dental Research, National Institutes of Health, Bethesda 14, Md.

The dentist and focal infection

Louis E. Silcox. *Pennsylvania D.J.* 23:6-8 Nov. 1956

The concept of dental focal infection and the part it plays in the production of systemic disease has become more complex as new knowledge has been gained of the importance of other factors such as allergy, endocrine activity, collagen diseases, the role of blood factors (particularly the lymphocytes), the stress syndrome and psychosomatic effects.

The bacterial concept which has many proponents defines a focus of infection as infecting bacteria, pathogenic for their host and producing toxins dangerous to him, which develop in a circumscribed region of tissue.

Focal infection is not synonymous with a focus of infection. The infecting bacteria in a primary focus of infection often confine their activity to the tissues they inhabit, especially when the patient's bodily resistance is high. Lowering of the general resistance through fatigue, tension, emotional upsets, chilling, and so forth, enables these organisms or their toxins to be carried by the lymphatics or the blood stream to other more or less distant tissues where the bacteria may form metastases or secondary foci of infection. At the same time their soluble exotoxins produce a bacterial systemic intoxication or toxemia with a host of general or local manifestations. It is this condition that constitutes focal infection.

Conditions which may be associated with focal infection include chronic arthritis of the infectious type, rheumatoid arthritis, myositis, neuritis, fibrositis, acute nephritis, myocarditis, phlebitis, and inflammatory lesions of the eyes such as iritis, and keratitis. The patient suffering from the effects of chronic focal infection may show general debility, loss of weight, secondary anemia, fatigue and muscle weakness.

The symptoms produced by focal infections are various and may point to dysfunction in the respiratory tract, gastrointestinal tract, heart, lungs or kidneys, or the symptoms may be generalized with nervousness, irritability and depression. In the allergic patient the bacterial toxemia occurs as a bacterial allergy with migraine, asthma or urticaria.

Focal infections have their source of origin more commonly in the upper respiratory tract than in other regions of the body. The lymphoid tissue of Waldeyer's ring in the throat is a prime nidus of focal infection. Lymphoid patches over the pharyngeal wall as a result of postnasal drainage secondary to ethmoid sinusitis is a common source of focal infection. Focal infection in the teeth, sinuses, tonsils, prostate and gall bladder is a common cause of vertigo, producing a toxic labyrinthitis.

Attempts to eliminate focal infection by treating the patient with intensive or prolonged antibiotic therapy have had poor results.

Lankenau Hospital, Philadelphia, Pa.

▼ Psychology

Bioclimatic disturbances in dental patients

(Probleme der Bioklimatik und zahnärztliche Therapie)

Walter Brüne. *Deut.zahnärztl.Zschr.* 11:7-13 Jan. 1, 1956

Bioclimatology is the science which deals with the relation between phenomena of the atmosphere (climate) and the living organism.

The human organism acts and reacts as a total unit. In dental and medical practice, mental disturbances of whatever cause cannot always be separated from physical disturbances, because both respond to the same organic functions.

Experienced dentists have observed that the mental attitude of many patients is changed frequently by climatic disturbance prior to treatment. These changes toward the dentist and dental treatment, whether normal or neurotic,

must be considered as biologic reactions of the organism to the sum of its vital conditions. Psychic and somatic reactions are so interrelated that the total biologic response of the patient can be termed "psychobiologic" phenomenon.

Nowadays, almost anything with the prefixes "bio" or "psycho" attracts immediate attention. Such terms are popular because they seem to indicate that the user's mind is in tune with up-to-minute thinking. Although little genuine thought often is spent in the use of such words, there can be broad concepts of human diseases or disorders which unfortunately carry the prefixes "bio" or "psycho." For many dentists, however, the ideas of psyche and life in diagnosis and treatment carry a highly unfavorable connotation of uncertainty. These terms frequently seem to excite hostility and disbelief and act as intellectual allergens.

Bioclimatology has its place in dental practice, because success of treatment often depends on more than the mastering of technical and clinical subjects. The interrelations between bioclimactic disturbances and patient behavior induced the German scientist, De Russer, to designate the synthesis of bioclimatology and the healing art as "medical geography." This idea is applicable also to dentistry.

The dentist should possess certain necessary physical, moral and psychological qualifications which can be listed in two groups: technical and emotional. The technical factors include ability, skill, knowledge and experience; the emotional factors are idealism, honesty, enthusiasm, interest and diligence. Between these groups lie professional ethics and constant improvement. These personal distinguishing qualities of character, together with a favorable physical appearance, are the traits by which dentists are judged by their patients.

The climatic disturbances can be divided into three groups as follows: (1) radiation processes; (2) atmospheric influences and (3) electromagnetic phenomena.

To understand the changed patient behavior resulting from climatic factors, the dentist should attempt to broaden his basic concepts. He should not fear new ideas and suggestions. A broadening of the dentist's horizon will result in a better dentist-patient relationship.

The technical difficulties in the consideration and evaluation of meteorologic data are not great. The dentists should learn to read and interpret weather charts as he interprets roentgenograms. This knowledge should be applied to the management of patients who are "under the weather."

▼ Pathology

Teeth, Streptococcus viridans, and subacute bacterial endocarditis

F. G. Hobson and B. E. Juel-Jensen. *Brit.M.J.* No. 5008:1501-1505 Dec. 29, 1956

Subacute bacterial endocarditis can be divided into two broad categories: (1) that due to *Streptococcus viridans* is generally less severe, its therapy rarely presents major problems, the immediate prognosis is more favorable, but the tendency to relapse is high. The teeth are commonly regarded as the most important focus of infection; (2) that due to other organisms is more acute, presents therapeutic problems related to the organism concerned, carries a less favorable immediate prognosis, but is unlikely to relapse if the initial attack is treated successfully. The focus of infection is usually located in a site other than the teeth.

In a series of 59 patients admitted to the Radcliffe Infirmary, Oxford, in the period 1945 to 1955, and diagnosed as suffering from subacute bacterial endocarditis, *S. viridans* was found in 43 patients. Sixteen patients were diagnosed as having subacute bacterial endocarditis due to other organisms. In the first group of 43, not a single patient was edentulous.

The diagnosis was confirmed by a positive blood culture in 25 patients (58 per cent); in 18 patients (42 per cent) the diagnosis rested on the clinical picture, but was confirmed by post-mortem examination in five patients. In seven patients (16 per cent) the initial attack of subacute bacterial endocarditis was related specifically to dental extractions 10 to 42 days before admission to the hospital. Relapses occurred only

in five patients who retained some teeth after the initial attack of endocarditis had been subdued.

Antibiotic "cover" for dental extractions in patients in the course of active therapy did not prevent a heavy growth of bacteria, although this was immediately controlled, nor was this "cover" effective in sterilizing the tooth sockets or mucous membranes of the mouth.

A series of five case histories shows how intimately the dental history is linked with relapses in patients with subacute bacterial endocarditis due to S. *viridans*.

In subacute bacterial endocarditis due to S. *viridans* the evidence overwhelmingly incriminates the teeth as the all-important source of infection. So long as teeth or fragments of teeth remain in the jaws, a formidable, but preventable, hazard is present in the lives of these patients. In all patients who develop subacute bacterial endocarditis due to S. *viridans* complete dental clearance should be carried out as an essential part of the therapeutic attack on the disease.

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Periodontal findings in cyanotic individuals

C. Sallay. *J.D.Res.* 35:840-845 Dec. 1956

Periodontal observations were recorded in two groups of patients with cyanosis of central origin:

1. One hundred and fifty-five adults with acquired cardiac disease, whose ages ranged between 20 and 70 years, were studied. In 75 per cent, alveolar atrophy was observed. The gingiva was livid in color, more cyanotic than inflamed. Atrophy of the gingiva and the alveolus occurred concurrently. In the majority of patients, the atrophy uncomplicated by intercurrent gingival inflammation started in the region of the lower first incisors and remained most severe in this region. With progress of the cardiac disease and of age, the severity and extension of periodontal atrophy increased.

2. Thirty-three persons with a congenital vitium were studied. Their ages ranged from 3 to 28 years. Of eight who were free of cyanosis, no inflammation or atrophy of the gingiva was observed, but some in this group had rampant caries. Of the 25 persons with cyanosis, atrophy was observed in 24; the gingivae were cyanotic, edematous and swollen. Gingival inflammation was moderate, being restricted to the marginal region.

In patients with cyanosis of central origin, the kallikrein level of the saliva is increased substantially. It is assumed that the action of this increased kallikrein level in the saliva contributes to periodontal atrophy.

University Medical School, Budapest, Hungary

Dermatologic treatment of cheilitis

(Erkrankungen der Lippen und ihre Behandlung: vom dermatologischen Standpunkt)

K. Wulf. *Fortschr.Kief.Ges.Chir.* 2:250-251, 1956

In dental practice, two types of cheilitis are especially significant: (1) diseases and syndromes exclusively localized on the lips, and (2) general dermatoses in which the lips are involved.

All types of cheilitis may, and frequently do, promote the development of cancerous lesions and should be watched carefully.

The effective treatment of macrocheilia, microcheilia and cheiloses is possible only if the causative factors have been determined.

Weak salicylic acid solutions or balsam of Peru ointments (0.5 per cent) and an occasional application of silver nitrate sticks usually are sufficient to improve the conditions.

Artificial dentures should not be worn during the period of treatment. After improvement of the condition, it will often be necessary to construct new dentures to correct the occlusion. Strong antiseptics and irritating foodstuffs should be avoided. In severe instances, roentgentherapy is the method of choice.

In the differential diagnosis of general dermatoses in which the lips are involved, eczema, hemangioma, carcinoma and bacterial or virus infections should be considered.

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Left: Outline of cast region for athletic mouth guard. Right: Completed athletic mouth guard

Preventive and public health dentistry

▼

Preventive dentistry

A practical athletic mouth guard

William D. Heintz and Joseph L. Bitonte.
J.Ohio D.A. 30:192-197 Autumn 1956

The only satisfactory athletic mouth guard is one that is individually fitted; this requires an impression of the teeth, taken by a dentist. This requires about five minutes and is the only step in the processing of the mouth guard that must be done by a dentist. The remaining steps can be performed by any interested person with minimal training.

The finished mouth guard is a snugly fitting layer of latex rubber, covering only the maxillary teeth and adjacent gingival tissue. It may be inserted or removed quickly. It does not need to be held in place either by biting or with the aid of the tongue. It need not be bulky and permits adequate speech. It does not interfere with breathing or swallowing. It is unaffected by soap and water washings. The player's name, initials or number may be processed in the guard without additional steps. The cost of materials is about 50 cents per unit. The method for constructing the athletic mouth guard is as follows:

1. A complete upper arch impression is taken in any elastic impression material. Any partial denture is first removed. Undercut regions under fixed bridges and orthodontic appliances are filled in with soft wax to permit removal of the impression without distortion.

2. The cast is constructed with a thick mix of either plaster or stone, preferably the latter.

3. The cast is air dried for at least two hours at room temperature.

4. The region to be covered is outlined on the cast. The labial and buccal flanges should be ⅛ inch short of the tissue reflections. Lingually the anterior third of the palate is covered. In the molar and bicuspid region the flange is extended about a quarter inch beyond the cervical margin.

5. At least four layers of liquid latex are applied to the cast. A small camel's hair brush, rigid enough to push the latex into all interproximal spaces and occlusal and edentulous surfaces with a minimum of air bubbles, is used for the first layer. The brush is washed immediately in cool water or chloroform to avoid latex hardening on the brush. The first layer is dried for about an hour. The second, thicker layer is applied with

a larger, stiffer brush and cured as before. The third, still thicker layer is applied with a daubing motion and cured. The fourth layer is applied with either a brush or a small spatula to obtain the following desired thicknesses: labial, 3 mm.; buccal, 3 mm.; incisal, 2 mm.; occlusal, 1.6 mm., and lingual, 1.5 to 2 mm. The final layer is air dried for four hours and placed in boiling water for ten minutes. Only now may the appliance be removed from the cast and examined for thin regions.

6. The mouth guard should be scrubbed with soap and water before it is used, to remove most of the "rubber taste."

The mouth guard described should not be confused with the type of mouth guard formed by biting into a heated, horseshoe-shaped blank.

The mouth guard described is also recommended for use by patients with epilepsy. The patient can carry it with him. On the onset of the preseizure aura, he can insert the guard and avoid the frequently serious injury to the tongue that results from biting.

College of Dentistry, Ohio State University, Columbus, Ohio

▼

Statistical research

Punched-card recording of carious lesions of both dentitions of man

Gerald J. Cox and Jessica Witteman Nathans. *J.D.Res.* 35:950-953 Dec. 1956

A method is reported whereby individual dental records can be reduced to a single punched card of the Hollerith type to permit the following: (1) the ready analysis of a population for simple frequency of carious attack on any surface of any of the deciduous and permanent teeth of man; (2) study of association of decay of any groups of two or more dental areas, and (3) study of frequency of and associations of other oral conditions.

The complete condition of each tooth is shown by a single number representing an empirically determined combination of carious attack. This number is derived from the formula 2^n -1 in which "n" is the number of surfaces commonly attacked by caries in a specific tooth. For example, if a tooth may become carious in four areas there are 2^4 -1, or 15 combinations of decay.

The reported method was used to transfer the individual dental observations of about 4,300 American Samoan children and young adults to punched cards.

School of Dentistry, University of Pittsburgh, Pittsburgh, Pa.

Dental examinations of 8,139 Army recruits

Robert W. Hobson. *U.S.Armed Forces M.J.* 7:1648-1656 Nov. 1956

Periodically, members of the U.S. Army Dental Corps are asked for information concerning the dental status of Army recruits. Prior to this study no compilation of such information was available on which to base an adequate reply.

An examination of 8,139 recruits from all six Army Areas was conducted in April and May 1955 in order to determine the dental status of this group of men. During the two month period every third recruit reporting to the dental clinic was examined, and the results recorded on a standard form.

Of the 8,139 recruits examined, 7,889, or 97 per cent, were in the group aged 17 through 26 years. These 7,889 recruits required 38,137 restorations involving 57,267 surfaces, or an average per man of 4.8 restorations involving 7.3 surfaces. One out of every four persons needed a defective filling replaced, and one out of every four was in need of a bridge. The average recruit was missing 3.93 teeth with 0.8 extractions indicated. This did not include extractions needed for the construction of prosthetic appliances or where it was found impossible to render restorative treatment. For each 100 recruits, 19 dentures of all types were needed. Twenty-two per cent of all recruits examined had some degree of periodontal involvement and 45 per cent were in need of a prophylaxis.

A conservative estimate of the annual new caries rate for recruits in the Army is 1.5. This

would mean a total of three new lesions during the two year obligated period. Added to the average number of restorations needed on induction, this would make a total of 7.8 restorations that the average young man of draft age would require during his two year period in the Army, if he were to be discharged in a caries-free condition.

Office of The Surgeon General, Department of the Army, Washington, D.C.

Factors associated with congenital cleft lip and cleft palate in the Pacific Northwest

Oscar E. Beder, Herbert E. Coe,
Richard P. Braafladt and James D. Houle.
Oral Surg., Oral Med. & Oral Path. 9:1267-1273 Dec. 1956

A statistical analysis of the medical histories of 433 patients with cleft lip or cleft palate treated over the past ten years at the Children's Orthopedic Hospital in Seattle reveals a pattern both similar to and different from the analyses made in other geographic areas. The factors investigated were types of clefts, their incidence, sex of the patient, the effect of order of birth, maternal age, hereditary background, race and the incidence of associated anomalies. The following conclusions were reached:

1. Class 1 (fissure of the azygos uvulae muscle or tip of the uvula) and Class 2 (fissure of the uvula) clefts are not detected routinely unless the patient is given a complete physical examination for other reasons, since these clefts do not inconvenience the patient.

2. Of all clefts studied, 59 per cent involved the lip and palate (Classes 5 and 6); 27 per cent involved the palate only (Classes 1 to 4), and 14 per cent involved the lip only.

3. Unilateral clefts occur most frequently on the left side; 66 per cent of the unilateral clefts were on the left, and 34 per cent were on the right.

4. Unilateral cleft lips occur more frequently than bilateral cleft lips.

5. Cleft lip and palate (Classes 5 and 6) occurs more frequently than cleft lip only or cleft palate only (Classes 1 to 4) in both boys and girls.

6. Cleft lip and cleft lip with cleft palate occur more often in the male.

7. The incidence of cleft palate only is greater in the female.

8. Cleft lip and palate (Classes 5 and 6) occurs more frequently than clefts of the lip or cleft palate only in each of the birthrank groups.

9. Clefts of all classes were more common in the first-born group than in any other group.

10. Mothers in the group aged 19 to 24 years have the highest incidence of children with clefts.

11. Twenty-three per cent of all patients showed a positive hereditary background; 77 per cent did not.

12. Only one of the 433 patients was a negro.

13. Of the patients studied, 14.5 per cent had associated anomalies, including heart defects, clubfoot and malformation of the hands, fingers and legs.

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A system of classification and scoring for prevalence surveys of periodontal disease

A. L. Russell. *J.D.Res.* 35:350-359 June 1956

A quantitative method of scoring periodontal disease for field population studies is reported. The method requires a minimum of equipment and returns comparable results.

The condition of the investing tissues is estimated individually for each tooth in the mouth, and is scored according to a progressive scale which gives relatively little weight to soft tissue inflammation and relatively great weight to destruction of bone. The score for an individual patient is the arithmetic average of the scores for the teeth in his mouth. The population score is the arithmetic average of the individual scores for the persons examined. Scores may be computed for a population of teeth (for example, for mandibular first incisors) as well as for persons.

Field equipment consists of a mouth mirror and explorer, supplemented occasionally by a straight Jacquette scaler or a chip blower.

Each tooth is scored according to the clinical condition of its supporting tissues. In the absence of overt inflammation in the free gingiva, or loss of function caused by destruction of the investing tissues, a tooth is considered to be negative and is assigned a score of zero. The scale provides for two stages of simple gingivitis, differing only in the extent of inflammation, and is scored 1 and 2. A score of 6 is assigned when a periodontal pocket is demonstrated, except when tissue destruction is so far advanced that masticatory function has been impaired, in which case the highest score, 8, is given. When roentgenograms are studied, it is sometimes possible to detect bone resorption prior to the appearance of a periodontal pocket. In the clinical test such instances were assigned an intermediate score of 4. The scoring scale places the greater emphasis on advanced disease, and minimizes examiner disagreement.

Prevalence of dental caries in young adult males in Israel (18 to 30 years of age)

Max M. Weinreb and David Ben-Shushan.
J.D.Res. 35:630-637 Aug. 1956

The caries experience of 7,727 male Israeli soldiers 18 to 30 years old was assessed by clinical examination. At the age of 18 years 81.39 per cent were affected by caries, and the attack rate showed an almost continuous acceleration to 98.81 per cent at age 29 and 96.80 per cent at age 30. At 18 years of age 76.10 per cent of the soldiers had caries in the first permanent molars; thereafter, the increase in the incidence of caries in the first permanent molars was steady with only slight drops at the ages of 20, 23 and 26 years. The number of DMF teeth at the age of 18 was 3.66 per person. From 19 to 30 years this figure showed a steady rise so that at age 30, the average number of DMF teeth per person was 8.62. The increase in caries experience was faster in the maxilla than in the mandible so that an appreciable difference exists between the two jaws at age 30.

Other findings were as follows:

1. The number of DMF teeth was low when compared with data from other countries.

2. Caries prevalence among those born in Israel and the Middle East was exceedingly low. This portion of the sample accounted for the rather low caries rate for the group.

3. The mandibular first molars were more often affected by caries than were the maxillary ones. There was a relatively low correlation between the caries prevalence in the first permanent molars and total caries experience. Therefore the first permanent molars do not provide a reliable index for total caries experience at the ages of 18 to 30 years.

▼ School dentistry

School dentistry in Switzerland

(Der Stand der Schulzahnpflege in der Schweiz)

M. Gutherz. *Schweiz.Mschr.Zahnhk.* 66:807-808 Sept. 1956

Switzerland is a federal republic with full sovereignty residing in the people of 22 cantons. A look at the map explains the difference between Switzerland and the other European countries. Differences in the living conditions also exist between the cantons in the valleys and those in the mountains. Because the cantonal governments are autonomous, all new health proposals such as the fluoridation of water supplies or the creation of dental school clinics encounter difficulties.

In Switzerland, school dental service is not compulsory. Various regulations and limits are stipulated by the different cantonal governments.

The compilation of dental service at present rendered to the Swiss school children is as follows: (1) in cantons of the valleys, 88 full-time dentists in 177 communities serve more than 120,000 children in 48 school clinics; (2) in cantons of the mountains, 10 full-time dentists serve more than 10,000 children of 120 communities in 8 mobile dental units, and (3) all over the country, 585 practicing dentists employed part-time serve about 190,000 children of 1,092 communities.

From about 500,000 Swiss school children,

320,000 are examined and treated regularly by school dentists. About 80,000 other children regularly visit private dentists. These children, however, are not under cantonal control and supervision. At present, more than 80 per cent of all Swiss children receive dental treatment regularly.

The main aim of the Swiss school dentistry is effective caries prevention and control.

St. Albanvorstadt 12, Basel, Switzerland

▼ Nutrition

Clinical signs of deficiency in the oral cavity (Signos clínicos de carencia en la cavidad oral)

G. Gómez Llanos de Landa. *Odontoiatría, Madrid* 13:387-400 July 1956

The three stages of nutrition—ingestion, assimilation (metabolism) and elimination (excretion)—are important for the preservation of healthy buccodental structures. The oral cavity is the structure in which clinical signs of nutritional deficiencies appear constantly.

The clinical signs of nutritional deficiencies in the oral cavity include the following:

1. Multiple deficiencies: hypertrophic gingivitis and periodontosis in persons of all ages, and poor dental hygiene.

2. Protein and amino acid deficiencies: Experiments have shown that deficiency of proteins in animals caused osteoporosis of alveolar bone and changes in the periodontium. Deficiencies of amino acids in animals caused general systemic but no buccodental changes.

3. Water deficiency: general dehydration in patients with Addison's disease, diabetes, and so forth, with a red, dry and fissured oral mucosa.

4. Vitamin A deficiency: hyperkeratotic hyperplasia of the oral mucosa, hyperkeratotic gingivitis and disorders in the development of the enamel with lesions that vary from metaplasia to atrophy of the enamel.

5. Deficiencies of the vitamin B complex: In deficiencies of niacin, thiamine and nicotinic acid, there occur simple or atrophic keratosis, simple or complicated stomatitis, perlèche, chronic glossitis, edema of the tongue, sialorrhea, ulceration of the type of Vincent's infection of the tongue and of the labial mucosa, and ulcerous, vesicular, herpetic or granulomatous hypertrophic gingivitis. Ulcerous gingivitis and periodontal lesions occur in endemic pellagra. In riboflavin deficiency there occur atrophy of the alveolar ridge with loss of the incisors and the syndrome known as "New Guinea mouth," consisting of ulcerous gingivitis and suppurative periodontitis. Deficiency of some of the vitamins of the B complex causes changes of the innervation of the teeth and of the sensitivity of the teeth to normal reflexes.

6. Vitamin C deficiency: hemorrhagic gingivitis due to partial deficiency (hypoavitaminosis) and scurvy due to severe deficiency (avitaminosis). The severe lesions of avitaminosis C include spongy, hemorrhagic gingivae and diffuse swellings. In adults there may occur pocket formation, ulcerous gingivitis, atrophy of the alveolar bone, severe periodontal lesions and disorders of the cells of the teeth, pulpal degeneration and necrosis of the pulp.

7. Vitamin D deficiency: hypoplasia of the enamel which varies from mild to severe with complete lack of enamel formation, poor calcification of the cementum and pericementum, and periodontosis which causes mobility of teeth, loss of occlusion and other disorders.

8. Calcium and phosphorus deficiency: When it occurs during the period of odontogeny, the dental lesions are irreparable. The teeth that are completely calcified and formed are not harmed by a deficiency of vitamin D. The early sign of the deficiency is severe reabsorption of the alveolar bone, followed by the development of paradentosis.

9. Magnesium deficiency: Experiments have shown that this results in disorders of calcification of the teeth, changes of the enamel and of the nature of the dentin. The formation of dentin is delayed. Chemical analysis of the bones of animals with magnesium deficiency shows that the amount of magnesium is normal in teeth and subnormal in bones. It is assumed that a deficiency of magnesium in man produces the same lesions.

Instituto Nacional de la Nutricion, Buenos Aires, Argentina

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Caries etiology and control

In vitro production of experimental enamel caries

A. F. Forziati, F. L. Losee, W. W. Pigman, W. H. Jennings and M. E. Lawson, Jr. *J.A.D.A.* 53:655-661 Dec. 1956

In an effort to expand the information on the lesions produced by microorganisms in the artificial mouth developed by Pigman (1952), this current study was undertaken. The study compares normal, carious and artificially affected enamel by technics using ordinary and polarized light and ultraviolet radiation.

The optical examination revealed a noticeable similarity of *in vitro* caries to natural enamel caries. Among the similarities are the following: (1) gross appearance of a white spot lacking fluorescence; (2) alteration of fluorescence and birefringence in the lesions areas as seen in thin sections; (3) accentuation of the rods, their cross striations and the Retzius' lines, and (4) serration at the degradation front.

National Bureau of Standards, Washington, D. C.

Effect of replacement therapy on dental caries experience of radiothyroidectomized rats

Joseph C. Muhler, David Bixler and William G. Shafer. *Proc.Soc.Exper.Biol.& Med.* 93:328-330 Nov. 1956

Earlier studies have shown that the activity of the thyroid gland appears to be directly related to the incidence of dental caries in the rat. To extend these studies, it was considered important to determine if it were possible to return the increased incidence of dental caries occurring in radiothyroidectomized rats to that of the control value by replacing the thyroid hormone. Thyroxine administered subcutaneously was used for this purpose instead of desiccated thyroid in the diet as used in previous studies, since by use of injection technics it is possible to regulate the dosage accurately.

The injection of I^{131} results in a significant increase in the incidence of dental caries and confirms previous studies. Similarly, when thyroxine was injected into nonthyroidectomized rats, the incidence of dental caries was significantly decreased. Testosterone injection did not decrease the caries incidence to the same degree as thyroxine in thyroidectomized rats, but did result in significantly less dental caries than found in the nonhormone-injected radiothyroidectomized animals. The injection of both thyroxine and testosterone into radiothyroidectomized rats results in about the same incidence in caries as found in the controls.

These studies seem to implicate the thyroid hormone in maintaining the function of the salivary glands and in turn directly affecting the incidence of dental caries in the rat.

Fluorine in pregnancy

Brit.M.J. No. 4993:667 Sept. 15, 1956

Q.—Which foodstuffs are richest in fluorine? In an area where the fluoride content of the water is low, would an extra supply of such foods protect the teeth of an expectant mother against decay? Would such a diet have any effect (beneficial or otherwise) on her milk, and hence on her child?

A.—Most foods contain less than 1 ppm of fluorine, and this is true even of plants grown in soils which are rich in fluorine. This is thought to be because the fluoride in the soil is present as insoluble calcium fluoride, which is not taken up by plants. Tea, which grows in an acid soil, seems to be an exception, and in some countries tea is the "food" of greatest significance in determining the fluorine intake. One cup of tea may provide 0.2 mg. of fluorine, so that many people must obtain at least 1 mg. a day from this source alone. The only other foods which contain significant amounts of fluorine are sea fish and products such as fish paste.

Tea and fish would help to protect the teeth of any person against decay, but a high fluorine intake has no effect on the amount of fluorine

secreted in the milk. Proprietary baby foods containing powdered bone may contain quite large amounts of fluorine, so much so that infants fed on them may ingest more fluorine than adults eating a considerably greater quantity of food.

The fluorine problem in Argentina, Peru and El Salvador

(Das Fluorproblem in Argentinien, Peru und El Salvador)

Ernesto Cohn. *Bl.Zahnhk., Zurich* 17:248-249 Jan. 1957

An immense increase in the incidence of dental caries has been observed throughout the world. In dental and medical literature, the urgent need for effective caries prevention is emphasized. Fluoridation of drinking water has been introduced in the United States and in many European countries. Experiments are carried out with topical applications of sodium and stannous fluoride, fluoride tablets, fluoridated salt and milk. Recently the public health authorities of the Latin American republics became aware that caries can and should be controlled by means of fluoride.

In Argentina, at the Dental Faculty of the University of Buenos Aires, Luis A. Bengoches carried out large-scale experiments in which an aqueous 2 per cent sodium fluoride solution was applied topically to the enamel surfaces of the teeth in selected groups of school children. Sodium fluoride was applied to the participants in the test once a year for four years; later infants and preschool children were included.

Bengoches reported an average decrease in caries incidence of 45 per cent, and a 30 per cent reduction in the incidence of new caries in previously noncarious teeth.

Supported by the Argentine school and public health authorities, the topical applications now are continued on children of other Argentine communities. These children are divided into age groups (4, 7, 10 and 13 years old), and are examined, treated, and re-examined at the end of four years. The results will be reported at a later date.

In Peru, Carlos G. Gonzales D., the head of the dental department of the Ministry for Public Health, has duplicated Bengoches' experiments. He included, however, mothers and their newborn babies as subjects.

All Peruvian procedures directed toward caries prevention are fully supported by the dental and medical associations, the federal and municipal authorities and the Peruvian press. Unfortunately, such support is lacking in the other Latin American countries.

A large-scale educational program on caries prevention has started which is directed to pregnant women, teachers, school children and the general public, and this program also includes information on nutrition and oral hygiene.

The Peruvian province of Callao already has introduced fluoridation of drinking water.

In Lima, the country's capital, the topical application of an aqueous solution containing 2 per cent sodium fluoride to the enamel surfaces of deciduous and permanent teeth in preschool and school children is carried out in the dental clinics and by practicing dentists.

The results of both caries-preventive measures —fluoridation of drinking water and topical application of sodium fluoride—have not been published.

In El Salvador, a proposal for general fluoridation of drinking water was strongly opposed by several groups within the population.

In the city of Santa Ana, however, natural drinking water which contains 1 ppm fluoride has been sold since 1953. The sale of this bottled fluoride-containing water had an unexpected success, not only in Santa Ana but in the neighboring communities.

The chemist, Ortiz, reported that children who had consumed this water regularly showed a significant decrease in caries frequency.

The Dental Society of El Salvador does not support the proposal of the municipal government of Santa Anita to extend the sale of fluoride-containing drinking water to other communities on a nationwide scale.

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Professional activities

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Education

The Dental Clinic of the University of Munich

(Die Entwicklung der Klinik für Zahn-, Mund- und Kieferkrankheiten der Universität München)

F. Hochreither. *Deut.Zahnärztebl.* 10:602-608 Aug. 22, 1956

Before 1886, Bavarian dentistry, then hardly organized, had neither educational nor professional standards. At that time, the Bavarian Ministry for Education contemplated the establishment of a dental clinic as the first institute for dental education in Bavaria. After various difficulties were eliminated, the first Royal Bavarian Dental Clinic was opened in 1900 as a part of the Medical Faculty of the University of Munich. In Germany, a dental clinic is the equivalent of a dental college.

The old Royal Bavarian Dental Clinic

The first group of 70 dental students enrolled in 1901.

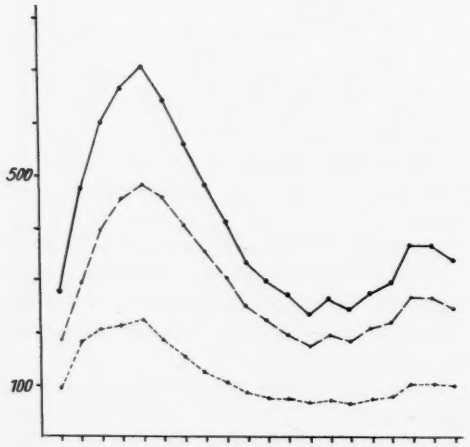
During the succeeding years, the rapidly increasing student enrollment necessitated the erection of several additional buildings. An entirely new campus was planned before the outbreak of World War II.

Most of the buildings of the old dental clinic were destroyed in 1945 by air bombings. Several departments of the institute were transferred temporarily to other buildings of the University of Munich. In the same year, however, the erection of a new dental clinic was started. In 1951, it was possible to move several of the institute's departments to the new building; the others followed soon afterward.

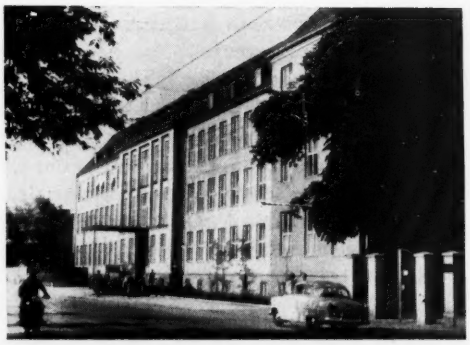
The new clinic is located at Goethestrasse 70, near the center of the campus of the University. The modern building contains an infirmary with eight accessory rooms, and 128 dental chairs in active use including those reserved for special purposes such as prosthetics, orthodontics, oral surgery, operative dentistry, pedodontics and dental roentgenography.

The library of the dental clinic contains about 5,000 bound and 3,800 unbound volumes, pamphlets and manuscripts all related to dental subjects.

The college provides facilities for graduate and postgraduate work in dentistry, especially in clinical oral surgery and advanced orthodontics which are elective subjects for undergraduates. Com-



Enrollment of students from 1946 to 1956. Upper curve = total number of students. Middle curve = male students. Lower curve = female students



The new Dental Clinic of the University of Munich

bined curricula, leading to the degree of Dr.med. dent., require the completion of seven years of study.

Courses for dental technicians, dental assistants and dental hygienists, and advanced courses and refresher courses for dentists, are contemplated.

Courses given at present include: general and dental anatomy, anesthesiology, bacteriology, biology, chemistry (inorganic, organic, physiologic and biologic), crown and bridge technics, dental history, forensic dentistry, dental pathology, embryology, histology, metallurgy, clinical and operative dentistry, oral hygiene, oral surgery, orthodontics, pedodontics, dental pharmacology, physics, physiology, preventive dentistry, prosthetic dentistry, psychology, radiology and roentgenology, dental therapy, endodontics, diagnosis and prognosis, and professional ethics.

Professor Josef Heiss is the dean (Direktor) of the dental college and also heads the clinical-surgical department. Professor Maria Schug-Kösters heads the conservative department, Professor Hans von Thiel the prosthetic department and Professor Felix Ascher the orthodontic department.

In 1956, the Dental Clinic of the University of Munich had an enrollment of about 300 students.

Goethestrasse 70, Munich 15, Germany

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Dentistry in government

Dentists in the Swiss army

(Der Einsatz des Zahnarztes im Felddienst)

H. Meuli. *Schweiz.Mschr.Zahnhk.* 66:820-822 Sept. 1956

In Switzerland, army dentists belong to the "sanitary corps" as do army physicians and pharmacists.

Previously, only a small minority of dental students and young practicing dentists were inducted into the Swiss army. Today, the majority have to serve. According to the latest statistics, there are 7,200 physicians, 2,200 dentists and 1,400 pharmacists in Switzerland, of whom 3,750 physicians, 510 pharmacists but only 390 dentists are in the sanitary corps.

The Swiss army urgently needs more able-bodied young dentists, because their services cannot be replaced by the activities of members of another profession.

The healing arts, medicine and dentistry, have made enormous progress during and after World War II, and oral surgery and orthodontics especially are important in wartime health care.

In the Swiss sanitary corps, treatment planning and treatment methods, as important as they are, become secondary to the maintenance of health for all members of the armed forces, and, therefore, prevention of diseases plays an important part in the activities of military physicians and dentists.

The Swiss army sanitary corps is designed to serve also in peacetime as the first line of defense. This organization will always be ready in the event of war. The services of this corps are available not only to officers and soldiers but to the general public if needed.

Mankind is aware that modern warfare will be a catastrophe not only for the armed forces directly involved but also for the civilian population of all, even the neutral, nations.

It is, therefore, the duty of all citizens, soldiers and civilians alike, to do their utmost to be ready to assist mankind in need.

Pasteur has said: "Science does not have a country, let us hope then the men of science will unite in a country of their own, the world." All should and must cooperate to strengthen the idea of peace for all mankind.

The future of dentistry in the welfare state

Editorial. *Brit.D.J.* 101:273-274 Oct. 16, 1956

Although dentistry as a separate profession in Britain is a recent offshoot of medicine, it is certain that for many years to come dentistry and medicine will be collateral professions each giving to and receiving from the other.

The Health Service has emphasized this dichotomy by paying physicians what amounts to a salary, and dentists according to the work performed. The method of applying the principle of payment by a scale of fees has led to disquiet within the dental profession.

An itemized scale of fees is based on an average speed of work for operations of average difficulty. Such a system has advantages for the state, the public and the profession; it is comparatively easy to operate, it meets the requirements of a large number of people, and it permits the dentist to do much of his work for a known fee. Some of the disadvantages of such a fee system are that it stifles initiative, discourages more intricate forms of work which are advantageous to the patient's future dental health, rebuffs the individualist, and puts a brake on progress. Can it be imagined that the progress made by dentistry since the last century would have occurred if the Ministry of Health and the Dental Estimates Board had controlled the profession from the 1880's?

Although the individuals comprising the controlling bureaucracy of the National Health Service are doubtless in the main men and women of vision and vitality, the general effect of the machine itself is myopic and deadening.

It would be an act of statesmanship to spend money on the building of modern schools and the training of teaching staffs, but this would be negated if the graduate continued to find himself prevented by "diagnosis from a distance" or by time-wasting procedures from giving his patients the benefits of the modern education he had received. If any dental treatment which the patient requires is obtainable theoretically but discouraged either by bureaucratic barriers or insufficiency of fee, then National Health Service dentistry will acquire the reputation of providing only the second best, a reputation to which it is perilously near today.

The dental profession welcomes the initiative of the General Dental Services Committee in reviewing every aspect of the general practitioner service with the aims of diagnosing where the faults lie and of proposing remedies for them. A questionnaire recently has been sent to all branches and sections of the British Dental Association and to all local dental committees, inviting proposals for improvements in dental service. All dentists with ideas on this subject should respond to this opportunity to help in building a better Health Service.

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▼ Interprofessional relations

The interdependence of medicine and dentistry

Ira Jay Berlove. *New York J.Med.* 56:3183-3185 Oct. 15, 1956

Although many systemic diseases have oral manifestations, and many oral diseases have systemic manifestations, the dental and medical professions are not doing all they should to bring about a closer working relationship. In many instances this is unfortunate for the patient.

There should exist between the practitioners of medicine and dentistry an intelligent cooperation, complete correlation of clinical and pathologic knowledge, and a desire to study and understand each other's problems.

Dentistry has developed and been maintained

from an early period as an independent form of health service. Unfortunately, the accent in dental care remains largely on mechanical procedures. More medical training is needed by the dental student, and further dental instruction in the medical curriculum is desirable.

There are numerous conditions in which focal infection is important as an etiologic factor. A thorough study of each patient is essential to a correct diagnosis in this field. It is particularly important that no possible focus of infection be overlooked. Such oversight has been a common fault in the past and has been responsible in no small part for the confusion which exists in this field.

Disturbed relations in the temporomandibular joint may lead to pain in other parts of the head and the neck. Unless the physician is aware of the possible dental origin of such disturbances, his differential diagnosis will be incomplete and possibly faulty. These conditions lead to a dental-medical "no man's land" which needs exploration and research.

When a physician refers a patient to a dentist, the physician should inform the dentist of the nature of the condition and give him all pertinent information. The dentist should then send the physician a complete report and give his recommendations for the treatment from a dental viewpoint. It is often desirable that a personal conference and consultation be held between the dentist and physician, at which time the patient's history and the medical and dental findings can be correlated and the course of treatment decided.

The hospital provides the ideal meeting ground for physicians and dentists to study patients with possible oral-systemic complications. The hospital provides the best way to bring about a close relationship and mutual respect between the two professions. Dental internships in hospitals are widely available today. Provision for them should be universal, as it is for medical graduates. When dental interns serve alongside medical interns, each gets the viewpoint of the other and each learns much about disease and oral and general pathology. This relationship provides for the interchange of observations and opinions for the solution of mutual problems.

944 Park Avenue, New York, N. Y.

Medical-dental relations

W. R. Alstadt. *J.Arkansas M.Soc.* 53:178-182 Jan. 1957

Medicine and dentistry are two great health professions with one goal, the total well-being of the patient. There are about 97,500 (89,000 active) dentists in the United States and about 225,000 (205,000 active) physicians. Medicine has 82 approved schools and dentistry has 45 approved schools. Medicine has 23 specialty boards and dentistry has seven. Both professions have headquarters in Chicago and both have branch offices in Washington, D. C.

Of all the professions, medicine and dentistry are the most closely allied. All other businesses and professions attempt to create things. Medicine and dentistry attempt to prevent things, particularly the occurrence of disease or illness in any form.

Medicine and dentistry should and must cooperate more closely than ever before in meeting and solving problems created by such developments as the following: (1) the $15 billion labor-management welfare funds with their promise of all health services as fringe benefits; (2) the huge inpatient and outpatient programs of the Veterans Administration; (3) the expansion of Blue Cross-Blue Shield programs; (4) the trend in industry for management to provide medical and dental services through company-employed physicians and dentists, and (5) the recent government report of a "model plan for national health insurance."

Both the medical and dental professions are united in opposing the continuation of the armed services draft of physicians and dentists and in supporting the Reed-Keogh Bill which would establish self-retirement plans.

From the nation's 45 dental schools, 3,100 dentists graduate each year. About 900 die and about 1,000 retire, for a net gain of about 1,200 dentists annually. The cost of schooling is about $2,500 annually; a dental education is the most expensive of all professional educations. It costs about $7,000 to equip a modern dental office.

Dentists and physicians should cooperate in urging people to have a medical and dental examination at least once a year. The dentist has

an excellent opportunity to advise a patient, when it is indicated, to see his family physician. The physician has a fine opportunity to assist the dental profession by advising patients of the need for routine dental check-ups.

If all the 97,500 dentists in the United States were to work 24 hours a day, and if all the people in the United States were to have all of the dental treatment performed that should be performed, it would require 400 years to catch up with just what needs to be done today.

The average age of a dentist is 48. The national ratio of dentists to population is 1 to 1,667. The average net income (before taxes) is $12,500. Forty-three per cent of gross income of dentists is expenses. Forty-seven thousand people are out of work daily because of dental disease. Women dental patients outnumber men 160 to 100. Dentists live to an average age of 67.5 years, or 2.8 years longer than average. Circulatory diseases account for 55 per cent of dentists' deaths, and neoplasms for 16 per cent.

610 Boyle Building, Little Rock, Ark.

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Literature

On the reading of medical literature

Alan Gregg. *U.S.Armed Forces M.J.* 7:1596-1604 Nov. 1956

The cardinal requirement for effective reading of medical literature is discrimination, and discrimination depends directly on learning how to think. Medical schools pay little attention to this essential skill.

The practitioner, researcher and the medical teacher should have the following qualities: the capacity to observe; the capacity to reason from their own observations; the ability to compare their observations and reasoning with the observations and reasoning of others, and the ability to put themselves in the place of the patient. The best time to read medical literature is after the reader has done some observing and reasoning of his own.

A mountain seldom looks the same from the north as it does from the south. Reality is like that; it has many aspects and can be fully portrayed only by views that are not identical or even similar, because they are views from different points of the compass. Reading makes available to the reader glimpses of truth that he has not seen.

The hallmarks of a good exposition are that it translates or formulates the less familiar into terms that are more familiar; it translates the obscure into the clear, the variant into the constant, the complex into the simple, the vague into the precise, forms into functions, and states into forces. An author of a scientific article fails in his purpose if he puts his ideas into terms that are unfamiliar to most of his readers.

Many sciences develop their own notational systems. Unless the reader is familiar with the notational system of a particular science, he finds reading it extremely tiring. Getting accustomed to symbols requires much effort, but using them effectively rewards the user remarkably. Familiarity with the symbols involved in some branch of science serves to protect against glibness in using them.

The best sieve through which to sift the first page or two of anything read is to note the adjectives and adverbs used. The statement "Mosquitoes transmit malaria" needs qualifying modifiers such as "all" or "some" for the subject and object, and the verb may require modifiers such as "always" or "sometimes." The word "only" may be needed to modify subject, verb or object. If a medical article has no qualifiers of the above-mentioned sort, the reader can assume he is not in first-class intellectual company.

A frequent purpose of scientific papers relates to finding the causes of some phenomenon or condition, but most medical scientists seem oblivious or ignorant of the fact that results usually come from many causes, not from one. When an author attributes a single cause for some event, the reader should ask himself if the author means the predisposing, the precipitating or the perpetuating cause.

The commonest failure in medical articles is the assumption that in a short series of cases, say 41, a positive result in 26 is evidence of something more than chance. The reader should

familiarize himself with the mathematics of probability, and with rhythmic and cyclical phenomena and also the technics of detecting their occurrence and their intervals.

One of the great needs of medicine, and particularly for men in research work, is a course in evidence. Intensive drill in distinguishing between hunches, surmises, varying degrees of probability, and the nature of certainty or proof could be an extraordinarily valuable experience for all persons in the medical sciences.

The history of medicine is loaded with false interpretations of biologic phenomena, inferences that were but derailments of reasoning. Clinical observations have been wonderfully good, in comparison to the inferences drawn.

49 West Forty-ninth Street, New York 20, N. Y.

Halitosis in ancient literature
(Vom Foetor ex ore in der Antike)

H. Geist. *Zahnärztl.Praxis* 7:12 Dec. 1, 1956

Offensive breath (halitosis) is one of the most frequent complaints of dental patients.

At the dawn of history, many people had offensive or foul breath, and in ancient literature, in comedies and tragedies, this affliction often is mentioned.

Titus Maccius Plautus (254-184 B.C.), the Roman dramatist, enumerated halitosis among the reasons for marital infidelity because "my wife's breath smells awful, I would rather kiss a toad."

In a comedy by Lysimachus (361-281 B.C.), advice is given how to win a girl: "Never be drunk when you flirt, and be always certain that your kisses do not transfer your unpleasant breath to the girl's mouth."

A similar suggestion, put into beautiful verse, was given by Ovid (Publius Ovidius Nase, 43 B.C.-17 A.D.): "No offensive odor of your mouth should taint your kisses of love." And to the girl, he recommended: "Your mouth should give forth the scent of a rose, and your kiss should possess the fragrance of dew falling in spring. If your breath is unpleasant, do not speak to your lover; and after you have eaten, do not kiss him."

The habitual drinker's breath emits offensive odors. Cosmus, a Roman manufacturer of cosmetics, got immensely rich by producing and selling aromatic pastilles which "chase away the bad odor of the mouth and turn it into the fragrance of violets." Then as now, manufacturers' claims were not believed by all. Marcus Valerius Martialis (Martial) wrote in the first century A.D.: "Do not take the pastilles of this charlatan, Cosmus, because the odor of eating and drinking still will come out of your mouth and fill the room with an increased pestilential smell." Later, he advised: "If you must drink, do it in solitude and do not disturb other people with your offensive breath."

Marcus Tullius Cicero (106-43 B.C.), the Roman orator and statesman, said in his speech against L. Piso: "When I speak to him, I know what he has eaten and drunken today, yesterday and the day before that, because his mouth smells like his kitchen."

Diseases also produce an offensive breath. Thucydides (471-400 B.C.), the Greek historian, wrote in his description of the pestilence in Athens, after the Peloponnesian War: "The breath of the victims of pestilence filled the streets and squares of the city with a fetid smell which was past endurance."

Aulus Cornelius Celsus (first century B.C.), the Roman medical writer, reported that persons afflicted with enlargement of the spleen or a diseased oral mucosa can be easily diagnosed by their characteristic offensive breath.

Hippocrates (460-377 B.C.), the father of medicine, wrote in his second work on women's disease: "A pleasant oral odor is essential for every girl, and it can be obtained and maintained by using a mouthwash containing anise, dill seeds, myrrh and unadulterated white wine." Another advice of one of Hippocrates' contemporaries, however, did not sound too promising: "If a person's breath is offensive, and his gums are dark and unhealthy, there exists only one remedy, to burn at midnight a rabbit and three mice to ashes, mix the remains with the dust of marble in a stone mortar, and apply this mixture three times daily to the teeth. The gingiva will become healthy again, and the offensive odor will vanish."

It is not astonishing that Gaius Plinius

Secondus, the Elder (Pliny, 23-79 A.D.) described a remedy: "For sweet breath's sake use a solution which should contain the liver of a badger, the ashes of a burnt head of a hare and plenty of lavandula. When the palate of a hyena and a bit of Egyptian alum, both powdered, are added, this mixture should be kept in the mouth for at least one hour. The offensive breath will lose its odor, and the foul sores in the mouth will be cured."

Plutarch (46-120 A.D.) reports in his *Writings on Morality* that after Hieron of Syracuse was informed by his physician about his offensive breath, the tyrant reproached his wife: "Why did you not tell me my breath offends you whenever I kiss you?" The woman's answer, "I thought the breath of all men had this terrible odor," is self-explanatory.

Munich-Pasing, Germany

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Trade and laboratory relations

International news of dentistry: Germany

K. Maretzky. *Internat.D.J.* 6:570 Dec. 1956

The Dental Act which came into force on April 1, 1952, was designed to put an end to the unlicensed practice of dentistry in Germany. This act authorizes only approved dental surgeons to practice dentistry, except that transitional arrangements are set forth for those persons who, although without university qualification, had been practicing dentistry before the law took effect. Today 99 per cent of the former "Dentisten" (that is, persons without any university qualification but having a legal certificate to practice dentistry) have acquired the designation of dental surgeon.

Difficulties continue to exist over the transitional arrangements because many laboratory technicians have tried to practice dentistry. Since the fitting of dentures means practicing dentistry, most of the courts have held that those laboratory technicians who had fitted dentures prior to 1952 might continue to do so. Some of these technicians, however, also practice conservative dentistry and extract teeth.

Although the professional designation "Dentisten" has no legal protection, some laboratory technicians call themselves "Dentisten" after the previous "Dentisten" who have been assimilated by the dental profession. [In the German language, the term "Dentist" designates "dental or laboratory technician," and the term "Zahnarzt" is equivalent for "dentist."]

Illegal practitioners have recently founded the Federation of German Dentists (*Bundesverband Deutscher Dentisten*).

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The hygienic standard of dental laboratories

(Hygienisk undersökning av dentallaboratorier)

L.-L. Berglin, I. O. Hävermark, B. Kronlund, A. Larsson, K.-D. Lundgren, G. Nyquist, and B. Springfeldt. *Sveriges tandläk.förb.Tidn.* 48:501-512 Oct. 1, 1956

During a medical examination of minors an increase in the urinary excretion of mercury was observed in those who were employed in dental laboratories. Consequently, an investigation of the general hygienic standards of 30 dental laboratories in Stockholm and environs was carried out, and the personnel were given a medical examination.

In 9 out of the 30 laboratories, the ceiling height was less than that recommended (2.70 meters) in regulations concerning workrooms. In two instances the air volume per person was less than the 10 cubic meters regarded as minimum, with four more laboratories on the minimum level. The amount of space provided for dressing rooms and lunchrooms was insufficient in most instances.

The ventilation, which is of major importance for work with amalgam and acids, was mostly poor. Eleven of the 30 laboratories were not equipped with exhaust fans and hoods, and where exhaust fans were found, the means to replace the stale air with fresh air were inadequate.

Analysis of the air showed that in most places the mercury content was very small. In a few

laboratories, however, the supposed threshold limit of 0.1 mg. per cubic meter was exceeded. Since urinary excretion studies in some instances revealed the presence of more than 100 micrograms per liter, which is higher than can be accounted for by the vapor content of the air, it is assumed that the additional intake consisted of grindings from amalgam models.

No instances of clinical mercurialism were observed. In order to diminish the risk of overexposure, sufficient ventilation and utmost cleanliness are of major importance, together with careful handling of the mercury and amalgam. As young people are known to be more susceptible to mercury, their work in the presence of this material ought to be minimized.

▼ Hospital dental service

Dental services for hospital inpatients

Isadore Altman and Joseph S. Stanton.
Pennsylvania D.J. 24:22-26 Feb. 1957

The Graduate School of Public Health of the University of Pittsburgh has made an inventory of dental facilities for inpatients (as part of a larger survey of hospital and related facilities in the Commonwealth), at the request of the Pennsylvania State Dental Society.

Questionnaires were sent to 228 general hospitals; 210 (92.1 per cent) replied. The results were combined in a table, with the data divided by size of hospital into five groups: less than 50 beds, 50 to 99 beds, 100 to 299 beds, 300 to 499 beds, and 500 beds or more.

Of the 210 hospitals responding to the questionnaire, 58 per cent stated they had an organized dental department. Whereas over three fourths of the group with less than 50 beds reported they had no dental department, all but one of the 57 hospitals with 300 beds or more stated that they did.

Almost half the hospitals with dental departments said these departments had independent status; about the same percentage reported that dentistry came under the department of surgery.

Some 76 per cent of the hospitals said they had dentists on the staff. The average number of dentists on the staff of those hospitals where there were dentists was 5.3.

A little less than two thirds of the hospitals reported that courtesy privileges were extended to dentists.

Pennsylvania hospitals had an average of less than one dental patient per hospital day. The number varied from about one patient every three days in hospitals with less than 50 beds to 2.6 patients in the hospitals of 500 beds or more.

A third of the hospitals stated they had one or more dental patients on waiting lists, the average number of patients being 7.6. Some hospitals have a fixed day for dental surgery; other hospitals state that all patients have to wait.

Two thirds of the hospitals which had dentists on their active or courtesy staffs reported that dentists could admit and discharge patients. A sixth reported that a physician had to participate in the patient's care and discharge. Since the question about joint participation of a physician was not asked specifically, the percentage of hospitals in which the dentist's authority to admit and discharge patients is thus qualified, may be considerably higher.

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▼ Forensic dentistry

Physical disability caused by injections
(Körperschäden bei Injektionen)

N. Ebermayer. *Zahnärztl.Praxis* 7:7
June 15, 1956

In dental practice, the injection of anesthetics may cause severe complications on which later damage suits by patients are based.

Whether infection at the site of the injection occurs or infiltrative inflammation appears, the patient always tends to blame the dentist. The same

holds true if during injection the syringe breaks and parts of the needle remain in the patient's body.

Not all courts render identical judgments as had been laid down recently by the Austrian Supreme Court. This court ruled that complications arising from injections cannot be avoided with certainty and that, therefore, dentists and physicians cannot be assumed to be at fault without establishing "breach of obligation" which alone could result in the defendant's condemnation and the granting of the plaintiff's demand.

In many instances, European courts in the past have been inclined to burden the defendant in damage suits with the production of legal evidence.

Breakage of a needle during injection, however, does not indicate that negligence or professional incompetence are the causative factors. Such accidents more often are caused by the patient's sudden movements during injection or by instruments in which defects are not perceptible by external inspection.

On such considerations, the decision of the Court of Appeal of the city and province of Hamburg, Germany, of June 18, 1953, was based. The verdict stated that the dentist against whom legal action was entered is under the obligation only to attempt everything in his power to remove the broken syringe fragments from the patient's body. If he is unable to do so, he has to refer the patient immediately to a surgeon who should be provided with a roentgenogram taken by the dentist. If the dentist, as in the case in question, has fulfilled his obligation, no evidence of carelessness or neglect exists.

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Processes of identification
(Processos de identificação)

I. C. Alves. *Rev.brasil.odont.* 14:191-203 July-Aug. 1956

Odontoscopy is a useful method for the identification of living or dead individuals. Thirty-four instances of identification of bodies of people burned in fires or of skeletons have been reported in the medicolegal literature. Of the three methods in use for odontoscopic identification, Silva's method utilizes the odontoscopic record with two formulas for the teeth in the right and left halves of both jaws. The record of the teeth is complemented by a record of the bite of the individual.

The odontoscopic records of Peñalver and Martins dos Santos include only the six anterior upper and lower teeth, starting from the right upper and lower cuspids. Both records are expressed in the form of fractions, the numerator of which indicates abnormalities of upper teeth and the denominator abnormalities of lower teeth. Peñalver uses only ten numbers to express abnormalities of the upper and lower teeth including the cuspids. Martins dos Santos uses numbers for the upper and lower incisors and the upper and lower left cuspids and letters (the first letter of the word designating the abnormality) for the upper and lower right cuspids. He uses nine numbers and nine letters.

In Martins dos Santos' method, the odontoscopic records are read together with the record of the palatine rugae. The palatine rugae near the midline of the palate are represented by nine symbols, each one represented in turn by the initial letter of the symbol, and by nine numbers. Letters and numbers are used in taking the record of the palatine rugae in the same way as they are used when taking the odontoscopic record. The letters used in the record of the palatine rugae are for the right (initial) and left (subinitial) rugae, that closest to the midline of the palate, and the numbers are for the complemental (right) and subcomplemental (left) rugae.

This record is expressed by a fraction in which the numerator corresponds to the right palatine rugae and the denominator to the left ones. The palatine rugae (papillae) located far from the midline of the palate are subsidiary. They are recorded only in the section of the record set aside for "observations" because they have little or no value in the process of identification.

The odontoscopic-palatal-rugoscopic records of Martins dos Santos are valuable as a means of identification, although to date no method of identification can be said to be perfect.

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Oral surgery

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Fractures

A modified metal urethral sound: a new instrument in reduction of zygomatic fractures

Raymond E. Boudreaux. *J.Oral Surg.* 15:31-39 Jan. 1957

The metal urethral sound, which has been used for years as an instrument for reducing zygomatic fractures, has inherent deficiencies when used for this purpose. These deficiencies are: lack of stability; difficulty in exerting adequate pull force because of the problem involved in trying to grip a smooth and small metal rod tightly enough to prevent its slipping, and the need to prevent lateral movement of the sound, in the region of the operator's wrist, to assure a maximum direct pull force. A greater amount of pull can be exerted on a rod fixed in its long axis to the arm, than on a rod grasped by the hand with the arm at a varying angle.

Two welded attachments were added to the sound to overcome these deficiencies. The elliptical-shaped addition near the point supplies the hand grip, with a concavity at the upper side for a thumb rest. The U-shaped band welded to the base provides a position for the wrist and fixes the arm in the long axis of the instrument, preventing lateral movement of the shaft and aiding stability.

The author has used the modified sound on a series of 88 patients and feels that it has distinct merit as an addition to the existing armamentarium. It is used, by the author, only with the intraoral buccal approach, and only with pull force. Five cases of various types of zygomatic fractures in which this instrument was used are reported.

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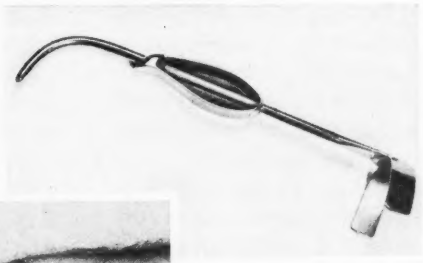
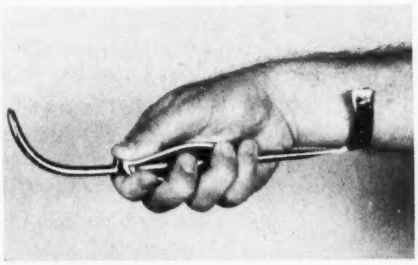


Right: Modified urethral sound with hand grip and armrest



Left: Modified urethral sound grasped in position for use

Ten years of jaw fracture treatment
(Kaebefrakturer gennem 10 ar)

A. Enghoff and S. O. Siemmssen. *Tandlaegebl.* 60:851-884 Nov. 1956

During the past ten years, 539 patients with jaw fractures were admitted and treated at the Dental Clinic of the University Hospital of Copenhagen. The results of an investigation of the accumulated case histories and treatment data can be summarized as follows:

1. More than half of all fractures of the jaws occurred in patients frøm 21 to 40 years old.

2. Jaw fractures were five times more frequent in men than in women.

3. The majority of jaw fractures had been caused by trauma; the minority by an increased exposure to trauma (epilepsy) or by an increased tendency to fracture (fragility of bones). The ratio between these main causative groups is 10 to 1.

4. More than 80 per cent of the jaw fractures occurred in traffic accidents, brawls (assaults) or were caused by injuries sustained during industrial work. The ratio of these groups is 2 to 2 to 1.

5. In eight of nine instances of mandibular fractures which occurred during dental treatment, a well defined, pre-existing fragility of the osseous structures has been demonstrated. Etiologically, the majority of these fractures can be characterized as pathologic fractures.

6. Fractures of the facial bones, mainly occurring in traffic accidents, were inflicted relatively more frequently on women than on men.

7. The incidence of jaw fractures inflicted in street accidents increased ten times between 1945 and 1953.

8. The number of instances in which jaw fractures had been caused by assaults remained constant during the same period.

9. In 5 per cent of jaw fractures treated, osteitis and cysts were the causative factors. Also these fractures can be classified as pathologic fractures.

10. Nearly half of the 539 patients treated had multiple jaw fractures.

11. In multiple fractures of the facial bones, the middle third of the face was afflicted from four to five times more frequently than the lower third. In the former instances, brain injuries often accompanied the fracture.

12. The majority of fractures of the upper jaw consisted of bilateral fractures (Le Fort's type 2).

13. The majority of fractures of the zygomatic process of the temporal bone were clinically manifested primarily by depression of the zygomatic arch, and secondarily by impairment of the tactile sensibility (hypesthesia) of the cheek or the upper lip.

14. Multiple mandibular fractures occurred more frequently than isolated mandibular fractures. The ratio between these fractures was 5 to 4.

15. Fractures of the mandible combined with fractures of the opposite condyle occurred in two thirds of the total number of multiple mandibular fractures.

16. In about one half of the jaw fractures treated, displacement of the fragments occurred.

17. In about two thirds of instances in which teeth were in the fracture line (150 cases), the healing period, after conservative treatment, was uneventful.

18. In fractures of the jaws, the cranial nerve was more often damaged than the trigeminal nerve.

19. In 45 per cent of the patients, oral surgical intervention was required.

20. In about 7.5 per cent of all fractures treated, negligence in previous treatment (untreated or insufficiently treated) was established. In these patients, malunion, infection or pseudoarthrosis were observed.

For immobilization, intraoral fixation with simple arch wires of the Sauer type was used. Chemotherapy (sulfonamides and antibiotics) had been used in only 9 per cent in 1944, but in 71 per cent in 1953 of jaw fractures. Postoperative infection occurred in 19 per cent, of which 2 per cent exhibited a specific infection in the form of an atypical cervicofacial actinomycosis.

Treatment in 60 per cent of jaw fractures obtained functional and esthetic successes. In 26 per cent, however, isolated defects remained. In 14 per cent, success or failure could not be evaluated because these patients did not appear for re-examination.

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Study and construction of external skeletal fixation splints in the treatment of mandibular fractures

(Estudo e construcao dos aparelhos externos de fixacao ossea de comando, no tratamento das fraturas mandibulares)

Gaspar Soares Brandao. *Rev. gaucha odont.* 4:101-110 Oct.-Dec. 1956

Extraoral splints can be used satisfactorily by the dentist. They have definite advantages, although some authors oppose their use in practically every type of fracture. Extraoral splints allow perfect control of edentulous fragments and of fragments that lack adequate retention for intraoral appliances. They are especially indicated for fractures distal to the angle and for comminuted fractures in which parts that would have permitted an intraoral dental splint have been destroyed.

The extraoral skeletal fixation shortens the patient's disability, allows him to work with no pain or discomfort, and permits necessary dental restorations to be placed. With these splints it is possible to reduce the fracture, continue normal feeding, decrease the danger of nausea and vomiting, extract teeth and maintain the space caused by loss of bone fragments.

Further advantages are simplicity of application, reduction of respiratory complications, and the fact that the patient's temporomandibular joint movements are not impaired. Extraoral splints permit the patient to eat, travel, speak and attend to his own mouth hygiene.

The splints are contraindicated in children because of the danger to permanent tooth buds, in psychopathic persons, and in instances of osteoporosis or osteomalacia of the mandible.

Failure can be caused by overheating of the bone through high-speed drilling, injury to soft tissues by perforation of the inner cortical bone of the mandible, and saliva contamination of the wound.

The operation should take place within six hours of the accident, should be preceded by a thorough roentgenographic examination and performed under intravenous or nasotracheal intubation general anesthesia.

On the field, which has been properly shaved, washed and sterilized, the surgeon will draw lines of fracture with a colored antiseptic.

When Steinmann pins are used they should be placed 5 to 8 mm. from the border of the mandible, no less than 15 mm. from the line of fracture, with 10 to 20 mm. between each other, 10 mm. away from the mental foramen; they should not enter a region where a pathologic condition exists. Two pins are placed on each fragment. The pin, mounted on a hand drill to avoid the speed and consequent heat produced by electric drills, is placed parallel to the lower border of the mandible and at a 45 degree to 60 degree angle to the surface of the bone. It should enter about 10 mm. The rods which connect the pins must be not more than 15 mm. from the skin, and firmly screwed in place once the fragments have been reduced. On termination of reduction the position of the fragments should be verified roentgenographically.

When screws are used the skin is incised and the bone perforated to a depth of 5 mm. by a drill of slightly smaller diameter. Once the screws have been placed, the skin wound is sutured.

If fixation is accomplished by clamps as advocated by Thoma, or Penn and Brown, the skin is incised as in the previous technic.

After the operation it is wise to give analgesic and antibiotic medication, and cover each incision with gauze dampened in an antiseptic solution, preferably an antibiotic.

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▼ Anesthesia and analgesia

Mandibular anesthesia: a simplified technic

Lawrence Chaikin and Benjamin Rubin. *J.A.D.A.* 53:672-676 Dec. 1956

A simple, direct method of achieving good mandibular anesthesia is described that has been adopted by the oral surgery department at the New York University College of Dentistry. The teeth of the lower jaw and their surrounding structures are best anesthetized with a nerve

block or conduction technic. The cortical type of bone in the mandible is dense and not easily permeated by the anesthetic agent. Therefore, if the solution is deposited at the mandibular foramen as the inferior alveolar or mandibular nerve enters the substance of the mandible, all afferent pain impulses are blocked before they reach conscious manifestation.

Among the surface landmarks to be used as guides for the operator are the coronoid notch, the pterygomandibular raphe, the pterygotemporal groove and the pterygotemporal depression.

To anesthetize the right inferior alveolar nerve, the patient's mouth is fully opened, and the operator palpates the right coronoid notch with the index finger of the left hand. Thumb forceps and gauze wipes are used to dry the injection site. The bacteria are fixed with the antiseptic agent. The needle is directed from the left bicuspid area and the syringe is held with a pen grasp, parallel to the occlusal plane of the lower teeth.

With the bevel of the needle facing bone, penetration is through the mucous membrane in the pterygotemporal groove at a level bisecting the fingernail of the left index finger. At this point the pterygotemporal depression is found. After the needle passes through the superficial layers and buccinator aponeurosis, it is carried in until it makes contact with the medial aspect of the right ramus of the mandible. The syringe is withdrawn about 1 mm., and about two thirds of the ampul of the anesthetic solution is injected. The solution is deposited slowly in the region of the mandibular foramen. The operator then withdraws the needle slowly, injecting for the lingual nerve on withdrawal. In about five minutes, the patient should manifest subjective symptoms of anesthesia.

The same technic may be used for anesthetizing the left inferior alveolar nerve.

To complete anesthesia for the posterior teeth, a supplementary long buccal or buccinator injection should be given; about 0.25 cc. of the solution should be deposited in the mucobuccal fold between the second and third molars. In the region of the incisors, supplementary infiltration injection will block off nerve fibers from the opposite side which cross the midline. Just a few drops of the anesthetic solution is sufficient to complete this procedure.

The "direct thrust" technic described has the following advantages:

1. It is the shortest route to the target, the inferior alveolar nerve.

2. The needle does not pass through heavy muscle fibers; therefore, there is less danger of myositis and trismus.

3. There is less danger of needle breakage because the injection is delivered in one position rather than shifting positions as with the indirect technic.

4. The injection is less painful since there is little or no resistance in the path of the needle.

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Symptomatic treatment of trigeminal neuralgia with a new anesthetic possessing prolonged effects

(Terapia sintomatica della nevralgia del trigemino, mediante un nuova anestetico ad azione prolungata)

V. Faraone. *Ann.stomat.,Roma* 5:51-58 Jan.-Feb. 1957

At the Dental Clinic of the Institute George Eastman in Rome, patients with trigeminal (facial) neuralgia are treated with a new anesthetic developed by the author.

This anesthetic possesses a prolonged effect varying between 10 and 15 days. Lidocaine hydrochloride (2 per cent) is used to obtain an instantaneous effect, and benzocaine (2 per cent) for a permanent effect. Benzocaine is dispersed with ultrasonic waves and stabilized with polyoxyethylene sorbitan monolaurate to a liquid solution.

The anesthetic treatment usually is continued for from 10 to 15 days, and it is repeated whenever the effect decreases.

This anesthetic was tested recently in experiments with 10 patients afflicted with severe facial neuralgia. In three instances, two injections were sufficient to arrest the sharp and stabbing pain along the course of the trigeminal nerve. In eight instances, from four to six injections were necessary (duration of treatment from two to three months). In two instances, paroxysmal pain necessitated eight injections

(duration of treatment, four months). Only two patients treated with the new anesthetic demanded another treatment method immediately after the primary injection.

In all instances reported, the patients were able to overcome without difficulty or complication the cycle of the neuralgic attacks.

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Unilateral blindness occurring after inhalation anesthesia

(Einseitige Erblindung nach Inhalationsnarkose)

G. Klomp. *Deut.med.Wschr.* 81:772-774
May 18, 1956

In medical and dental literature, only a few reports have appeared on the occasional occurrence of unilateral or bilateral blindness after surgery in which anesthesia produced by inhalation of anesthetic gases or vapors had been used.

In the few instances reported, the author assumed that the blindness was caused by either an extensive loss of blood during the operation, or, more rarely, by an embolism in the central retinal artery.

In the case reported, the patient, a 48 year old woman, received premedication with chlorpromazine hydrochloride (Thorazine). Nitrous oxide-ether inhalation anesthesia then was given through a closed system.

There was no evidence of vascular disturbances. Blood pressure had been normal during the operation and loss of blood was compensated for by intravenous transfusion of whole blood.

One day after surgery, the patient complained of blindness of the left eye.

The author states that an important, if not the only, causative factor in the occlusion of the central artery had been faulty positioning of the anesthesia mask.

Although the patient was unable to state whether her visual difficulty had started immediately after recovery from the anesthesia, the time factor was so remarkable that a relation between the inhalation anesthesia and the arterial occlusion causing unilateral blindness had to be suspected.

The incorrect position of the mask exerted an undue pressure on the left eyeball, thereby increasing the intraocular compression in the subsequently blind eye.

Givner and Jaffe have reported five similar instances in which a permanent unilateral occlusion of the central retinal artery occurred after inhalation anesthesia. Giraud, Rozan, Payreau and Fourcade, reporting two identical instances, named the incorrect position of the mask as the possible causative factor.

These references to unilateral blindness after inhalation anesthesia are particularly important, because such a complication as yet has not been described in German medical or dental literature.

To avoid such serious complications, physicians and dentists should select the anesthesia mask carefully and check its position during the anesthesia.

Should the patient, after regaining consciousness, complain of disturbance of vision, the eyes must be examined immediately and, if necessary, an ophthalmologist consulted.

Only an immediate treatment of the arterial occlusion can prevent permanent blindness.

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Lidocaine hydrochloride (Xylocain)

Hans Klingenhage. *Dent.Echo* 26:144-145
Nov. 1956

Procaine hydrochloride, the first anesthetic superior to cocaine in effect and applicability, was created and introduced to medicine and dentistry in 1906 by Max Einhorn.

Procaine hydrochloride, which is chemically of a relatively simple composition, has held its own as an effective injection anesthetic for more than half a century. This drug is relatively ineffective, however, when applied to an intact mucous membrane or to an exposed pulp. As an ester, procaine hydrochloride is not as stable as might be desired, and when combined with epinephrine, it often causes unfavorable side effects.

In spite of these disadvantages of procaine hydrochloride, it was difficult to find a new anesthetic that could supersede it.

In 1943, the Swedish chemists, Löfgreen and Lundquist, discovered a substance which differed

basically from the procaine type. After it was tested pharmacologically by Goldberg, and surgically by Gordh, the new anesthetic, lidocaine hydrochloride (Xylocaine), attracted the attention of physicians and dentists.

Lidocaine hydrochloride, either pure or in combination with epinephrine, now is used successfully in 43 countries.

Lidocaine hydrochloride provides an adequate anesthesia even in comparatively low doses, and can be used in infiltration and block anesthesia.

A 2 per cent solution of lidocaine hydrochloride is recommended for local anesthesia in the oral mucosa. The maximum dose is identical with that for procaine hydrochloride (0.5 Gm. = 50 cc. of a 1 per cent or 25 cc. of a 2 per cent solution).

This report is based on observation of over 3,000 anesthesias with lidocaine hydrochloride. The author feels that this number of instances, added to the several thousand that have been reported previously by other authors, is sufficient to recommend lidocaine hydrochloride as the most rapid, profound, and safe anesthetic to be used in dental practice.

Failure to obtain adequate anesthesia with lidocaine hydrochloride, unfavorable local tissue reactions, and general side effects, are extremely rare.

The potency of lidocaine hydrochloride is about twice that of procaine hydrochloride.

Wagenfeldstrasse 21, Hamburg 33, Germany

Hypnosis in dentistry (Hypnóza v stomatologii)

J. Lezovic. *Československ.stomat.* 55:54-56
Feb. 1956

Hypnotism was introduced to medicine by Franz Anton Mesmer, an Austrian physician, (1733-1815), from whose name the term "mesmerism" has been coined.

Hypnosis is a form of highly complicated behavior consisting of a special psychologic condition of awareness, sometimes superficially resembling sleep. During hypnosis, the individual functions at an unconscious or subconscious level of psychologic awareness in contrast to the normal state of general awareness.

In all probability, any normal person can be hypnotized under suitable conditions. The hypnotic trance varies according to the innate capacities of the subject and the skill and experience of the hypnotist in securing cooperative effects.

Contrary to popular belief, magical procedures or so-called "will power" have nothing to do with the technic of induction of the hypnotic trance.

Hypnosis is a phenomenon of stages or degrees, ranging from slight to profound.

1. "Responsiveness" is the term applied to the restriction of the subject's awareness to what is actually included in the hypnotic situation. In this stage, the subject responds to instructions from the hypnotist.

2. "Catalepsy" is the peculiar state of the muscle tonus which permits the subject to maintain position and posture for long periods of time without appreciable subjective fatigue.

3. "Suggestibility" is the state of an unusual receptiveness to suggestions which, however, must be acceptable to the subject. By accepting suitably worded suggestions, the hypnotized subject may manifest a great variety of behavior patterns among which anesthesia is the most important for dental purposes.

4. "Posthypnotic suggestion" is the administration of commands to the hypnotized subject to be acted on at a later time. In this phenomenon lies one of the most important values of hypnosis in dentistry because it permits an approach to the problem of prediction of future behavior.

To perform operative or oral surgical procedures under complete hynoptic anesthesia, the patient must be brought to a deep hypnosis, a stage which can be obtained only in about 25 per cent of persons. In all instances, it depends on the ability of the dental hypnotist to obtain psychoanesthesia by complete responsiveness. About 90 per cent of the patients are impressionable and can be induced into a sleeplike condition.

Hypnosis in dentistry can by no means be regarded as a panacea, but rather as a phenomenon interesting enough to merit further research instead of statements of half-truths, wishful thinking, misconception and premature promotion.

Further study, experimentation, and development of technics are needed before hypnosis can become applicable in dentistry for relaxation of

the patient, elimination of his fears and anxiety, maintenance of his comfort during dental procedures, accustoming the patient to orthodontic or prosthetic appliances, anesthesia or analgesia, premedication in general anesthesia, prevention of gagging and nausea, control of saliva flow and bleeding and postoperative anesthesia.

Although there exists some prejudice against hypnosis, adequate education of dentists and patients will permit hypnosis to assume its place in dentistry if the type of condition or situation within which hypnosis should be attempted is determined.

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▼

Surgical pathology

Carcinoma of the tongue

Frank C. Marchetta and Walter L. Mattick. *Surgery* 40:378-386 Aug. 1956

Two hundred and forty-seven consecutive instances of carcinoma of the tongue, treated at the Roswell Park Memorial Institute from 1937 through 1944, were studied. During these years, the tongue cancers, both the primary and metastatic lesions, were treated with radiation. No radical surgery was done.

During the same period, 15,344 patients with cancer of various bodily locations were seen at the Institute. Of this number, 1,268 (8.2 per cent) were diagnosed as intraoral cancer, of which 270 (21.1 per cent) was cancer of the tongue.

The usual etiologic factors commonly conspicuous in causing chronic glossitis, either singly or in various combinations, were recorded: tobacco, poor oral hygiene, leukoplakia, avitaminosis, and a history of syphilis or positive results in the Wasserman test. Eighteen and two-tenths per cent of the patients with tongue cancer had serologic reactions of the blood on admission and were presumed to have had a syphilitic glossitis at some time prior to the development of the malignant growth.

All the patients included in this report were treated by some form of irradiation. In 18 patients, an excisional biopsy specimen was taken because the lesion was less than 2 cm. in diameter and it seemed more feasible to remove the entire lesion; (15 of these 18 patients lived longer than five years). These local excisions, however, were given immediate postoperative radiation therapy to the site because the excision was considered a biopsy and not a curative procedure.

Various forms of irradiation were used in the treatment of these lesions. In some patients in whom the tongue mass was infiltrative, interstitial radon seeds or radium needles were used. In some instances, especially when the growth was of the exophytic type, intraoral roentgenotherapy was used. The tongue lesion generally regressed and often in more favorable instances, completely disappeared. This was most frequently seen in the exophytic type of lesion.

After treatment, the patients were re-examined every four to six weeks. If local recurrence or nodal metastasis was noted, further seeding of the growth or metastatic lesion was done. In some instances, further intraoral or external roentgenotherapy, spotting the nodes, was given after an interval of from six to eight weeks after the initial therapy.

The results were summarized as follows:

1. Two hundred and forty-seven patients with carcinoma of the tongue were treated almost exclusively by irradiation. No radical surgery was done.

2. The absolute five-year survival rate in all instances of tongue cancer was 17 per cent.

3. The absolute survival rate in lesions in the body of the tongue was 19.2 per cent. In these instances, if neck nodes were not present, the survival rate was 29.3 per cent.

4. The absolute survival rate in lesions on the base of the tongue was 9.8 per cent.

5. Sixteen and two-tenths per cent of all patients were free of disease for five years or more. This figure was approximately 10 per cent lower than that obtained in clinics where irradiation supplemented by radical surgery was practiced and the advantage in degree for this latter type of management was thereby demonstrated.

6. Irradiation cured only an occasional patient with cervical metastases.

7. Patients with the more differentiated lesions had a higher survival rate than did those with less differentiated ones. Survival, however, was more closely related to the presence or absence of nodes at the time of treatment.

8. Patients with smaller lesions without neck nodes and without bone invasion had the best survival rate.

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Nonsurgical treatment of oroantral fistulas

(Přispevek k léčeni oroantálnich komunikaci)

L. Wurmova. *Ceskoslov.stomat.* 55:176-179 April-May 1956

The oroantral cavity is lined with secretory, ciliated columnar epithelium. Openings from the oral cavity to the maxillary sinus may result from various causes. Bone destruction caused by osteomyelitis, syphilis, removal of extensive growth, trauma or tooth extraction frequently is followed by formation of more or less permanent openings between the mouth and the maxillary sinus. Oroantral cavities vary in size, shape and contour.

Most of the difficulties encountered in closure of oroantral fistulas arise from a failure to apply certain basic surgical principles in preoperative and operative management. The operation itself is routine.

Surgery, however, is contraindicated in instances of the so-called "hot" antrum, a condition in which the region is inflamed acutely in early stages before the patient is able to build up adequate resistance.

For the nonsurgical treatment of oroantral fistulas, the method introduced by the author can be applied. It consists mainly of covering the perforated antrum with an underlining of zinc oxide and thymol iodide cement and eugenol.

A model is constructed in the customary manner but it should allow for swelling. Then the appliance, plate and clasp attachment are constructed.

The zinc oxide-eugenol cement dressing must be renewed every second day. Daily rinsing with boric acid and administration of antibiotics are recommended.

Sometimes there is only slight swelling and little pain follows the insertion of the appliance. The patient should be advised to apply intermittent cold compresses to the face during the first 24 hours after insertion. Moist heat should be used if the extraoral swelling persists.

The nonsurgical treatment is gentle, but it takes a comparatively long time until cure is obtained.

In ten cases reported, after intervals of from three to four weeks the sinus conditions were improved and showed adequate drainage and ventilation.

This simple method of nonsurgical treatment of oroantral fistulas is more satisfactory than any procedure previously used.

Diagnosis of acutely inflamed oroantral fistulas should never be attempted from roentgenographic evidence alone. Successful nonsurgical closure of oroantral fistulas largely depends on proper diagnosis and perfect treatment planning.

▼ Plantation

Implantation of tooth roots made of methyl methacrylate

(Erfahrungen mit der Implantation von künstlichen Zähnen aus Methylmetakrylat)

Z. Hegedüs and G. Inke. *Schweiz.Mschr.Zahnhk.* 67:29-35 Jan. 1957

The biologically correct replacement of lost teeth by implantation or transplantation is one of the most important tasks of dental research. In many European and American countries, experiments are being carried out to establish the applicability of: subperiosteal implantation of metal substructures (cobalt-chromium alloy or tantalum) in edentulous jaws, transplantation of vital tooth germs, and implantation of substructures made of acrylic resins.

At the Dental Clinic of the University of Budapest, Hungary, the possibility of implantation of tooth roots made of methyl methacrylate was studied in dogs. Implants made of methyl methacrylate or of a mixture of osseous spongiosa, and self-curing acrylic resin were used.

The following conclusions were reached and have been reported at the Pathologic Congress in Debrecen (1955): (1) in all instances, healing occurred without inflammatory symptoms; (2) eight months after implantation of methyl methacrylate, observations revealed that the implantation was unsuccessful in almost 100 per cent of the instances, and (3) in isolated instances in which the implants had been splinted, the results were more favorable. Later examinations revealed that even these favorable results were only temporary.

The results obtained with implants made of macerated spongiosa mixed with self-curing acrylic resin (Spofacryl) were more favorable. The formation of a connective tissue junction with the implant was observed.

For further studies on the implantation of tooth roots, therefore, only the second method can be recommended.

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Vitallium implantation

Irving E. Gruber. *New York D.J.* 23:9-14 Jan. 1957

Although many methods have been devised for replanting and transplanting teeth, such teeth are possible foci of infection and most will eventually show resorption. Reports in the last 17 years show a measure of success with the use of Vitallium and tantalum.

Any metal that is noncorrosive and will not react in the body is chemically safe as an implant. Silver is apparently inert when 96 per cent pure, but it is then too pliable for most uses. Plated metals fail when the plating cracks and exposes dissimilar metals to the organic fluids. Vitallium, a nonreactive alloy developed in 1929, consists of 65 per cent cobalt, 30 per cent chromium and 5 per cent molybdenum, each of the metals being inherently resistant to corrosion. It can only be cast since it remains too hard to be worked even at elevated temperatures. Its ultimate tensile strength is 102,500 psi and its modulus of elasticity is 31,200,000 psi.

Dentists are familiar with electrogalvanic action in the mouth and recognize the importance of using inert materials for prosthetics. Dental implants present problems that differ from those elsewhere in the body, because of the saliva, calculus, enzymes, bacteria and food in the mouth. The fact that there is less infection in the mouth probably is due to the mouth's greater vascularity.

There are many technics for both bone and subperiosteal implants, and for combinations of the two. In bone screw implants the ultimate holding force depends on the screw area in contact with bone, and therefore has no correlation with initial holding force. Lew, Weinberg, Goldberg and Gershkoff, and Bodine and Kotch all found that the greatest retention was obtained by a proliferation of mucoperiosteum through a meshwork to the bone.

Postoperative histologic studies of Vitallium implants show no evidence of irritation. Osteogenesis about implants has been reported; the functional pressure of an implant is a stimulus to bone formation. Fibrous tissue forms about the implant which protects the osteoblasts so that they are not injured by the stress of mastication. No epithelial attachment has been demonstrated, but evidently a sufficient seal is established to prevent infection from penetrating along the implant. No downgrowth of the gingival attachment occurs. Tissue compression under the superstructure creates an inflammatory process but if pressure is avoided, the mucous membrane about the abutment remains intact.

A case is reported in which a Vitallium dental screw implant was inserted in the maxilla of a patient with a diagnosis of pulmonary tuberculosis. The implant was retained for 17 months; it became increasingly mobile and alveolar loss developed.

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Prosthetic dentistry

▼

Complete dentures

A surgical aid to a prosthetic problem

R. I. Gillies. *Australian D.J.* 1:329-330 Dec. 1957

Resection of the mylohyoid ridge and attached muscle in the molar region is an aid in providing comfortable, functional lower dentures for patients with atrophied mandibular ridges. Resection is indicated when the ridge has become so sharp that it produces pain on pressure from the finger or denture in the molar region, or when the mylohyoid ridge is level or nearly level with the crest of the alveolar ridge because of mandibular atrophy.

In such instances, resection will provide a sulcus into which a lingual flange of the denture may be placed. A buccal sulcus could not be provided by muscle resection or skin grafting because the atrophy of the mandible would not allow a sulcus of any depth. A sulcus may be provided lingually after resection, however, through extension of the floor of the mouth beyond the lower border of the mandible. The sulcus is established immediately after operation.

Adequate anesthesia may be obtained by local infiltration. The first incision is made 2 mm. anterior to the distal border of the mylohyoid ridge (Fig. 1). An incision can be made safely at this point as the lingual nerve is distal to the ridge in this region. The incision is carried over the ridge almost to the buccal reflection. A second incision is made along the mandible to the bicuspid region. This carries the main incision line away from the site of operation and replaces the flap on bone. The flap is reflected to expose the mylohyoid ridge and part of the muscle. This exposure is carried out by blunt dissection.

The ridge is removed in the molar region by mallet and chisel. The ridge is easily removed by a few taps with the mallet, with the chisel in the position shown in Figure 2. The attached portion of the ridge (Fig. 3) will disappear because of the action of the mylohyoid muscle but will reappear if finger pressure is used under the mandible to compress the submandibular space.

The detached ridge and muscle are drawn out gently with tweezers, and the muscle is cut below the tendinous attachment (Fig. 4). This prevents reattachment of the muscle which is vital for the successful creation of a lingual sulcus. The lingual aspect of the mandible is smoothed over with a bone file and the flap is replaced and sutured (Fig. 5). Frequently, only the angle of the flap requires suturing.

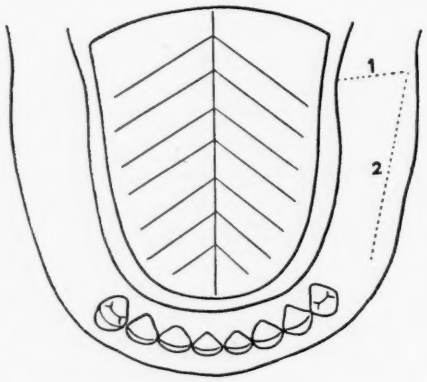

Figure 1

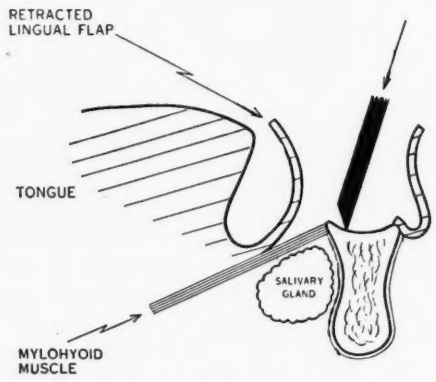

Figure 2

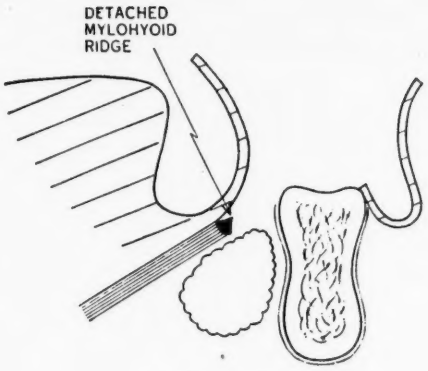

Figure 3

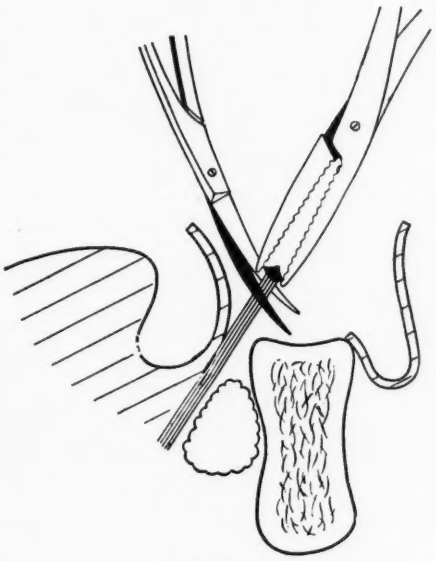

Figure 4

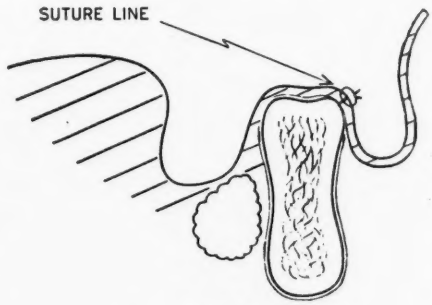

Figure 5

A hematoma is the main complication. Usually there is some slight bruising below the mandible or extending along the fascial planes of the neck. Infection rarely occurs. The lingual nerve is almost half an inch distal to the line of incision in an atrophied mandible and could be cut only as a result of gross inaccuracy of the incision. Sometimes the submandibular salivary gland may be seen after resection of the muscle, but presents no problem.

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Advantages of steel cast dentures
(Vorteile der Stahlgussprothese)

Karl Horina. *Österr.Zschr.Stomat.* 53:605-607 Nov. 1956

In dental literature, the terms "steel cast" or "stainless steel cast" denture or denture base are used frequently to designate restorations in which the alloys contain neither steel nor iron but Vitallium or related cobalt chrome compounds.

These new and extremely hard dental alloys consist mainly of a cobalt base to which either chromium and molybdenum or tungsten and nickel have been added. The production of these alloys is one of the most difficult tasks in metallurgy, and it requires an enormous amount of knowledge and experience to manufacture such metal compounds of a uniformly high quality.

Before World War II, such hard metals had been produced in the United States, especially in the form of an alloy of cobalt, chromium and molybdenum (Vitallium) and had been used successfully for cast dentures and surgical appliances.

Vitallium and the chemically related alloys possess besides their frequently reported special applicability for cast dentures, a high degree of hardness, tensile strength, elasticity and durability, and they do not corrode or tarnish under oral conditions. They meet the exacting and often even contrary demands in their mechanical properties. They are hard enough not to erode and lose their polish and are, therefore, not difficult to keep clean. They are stiff enough and strong enough not to require bulky sections in

clasps and bars. They are tough and ductile enough to permit adjusting, and resilient enough to permit clasps to spring into position and offer retention. They are light in weight but dense and close grained in structure.

These alloys which are not corrodible do not cause or accelerate corrosion in other metals present in the oral cavity when in occasional or permanent contact with them.

These alloys can be cast accurately into the smallest and most intricate shapes, and can be welded or soldered.

The fact that these alloys are harder than gold and retain their polish can be proved by the examination of dentures which have been worn for a considerable length of time.

The time required for constructing and finishing dentures made of these alloys varies according to the dentist's experience. He should be able to carry out this work from start to finish in about three hours.

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Atmospheric pressure and surface tension as causes of retention of complete dentures
(Presión atmosférica y tensión superficial como causas de retención en protesis totales)

A. Briner Y. *Gac. odont.* 2:377-380
April-May 1956

Either of two technics for the taking of impressions in the preparation of complete dentures is used routinely. The impressions are either "functional" or "mucostatic." Satisfactory results are secured by either technic. Opponents of either technic assert however, that the prostheses thus prepared are harmful to the buccal structures.

Page pointed out (1946) that complete dentures prepared by mucostatic impressions have good retention. This is achieved through surface tension. These statements were based on the facts that surface tension is a force property of fluids and since the palatal mucosa is constantly wet because of the saliva, constant surface tension is present and secures retention of the plates.

Latin-American colleagues challenge Page's statements. They say that surface tension does not assure retention of complete dentures and, in this connection, that quantitatively equal forces are necessary to separate two solids that are adhering through liquids of different surface tension.

These statements reveal incorrect experimental technics. It is a fact that retention of complete dentures prepared by mucostatic impressions is due to surface tension and that forces that are quantitatively different are necessary to separate two solids that adhere to each other by means of liquids whose surface tension is different. These forces can be measured only at a constant room temperature and by sensitive methods which should be used in the best experimental conditions.

Just as surface tension assures retention of the plates prepared by mucostatic impressions, atmospheric pressure assures retention of plates which are prepared with impressions taken by the other technic. The technics for taking "functional" or "mucostatic" impressions do not exclude each other. Each technic, however, is based on different physical principles.

Clinical prosthodontists should observe whether the use of complete dentures prepared with either technic produces immediate or later harmful effects on the buccal structures. Then the harmful technic could be abandoned.

Pronounced abrasion of acrylic teeth
(Några iakttagelscr beträffande akrylattänder i helprotesfall)

P.-G. Löfberg. *Svensk tandläk. Tskr.* 49:335-342
June 1956

Complete dentures with acrylic teeth were made for 12 patients. Follow-up examinations were carried out one to two years later, and the teeth were examined microscopically for defects such as abrasions, cracks and porosities.

Cracks were present in seven instances and porosities in five. Abrasion was observed in nine instances, four of which showed pronounced wear. Two types of abrasion were identified. In one the defects appeared to be caused by the occluding teeth and thus resembled physiologic abrasion. Contact between the occluding teeth was retained, but extreme abrasion led to decrease in vertical dimension. In the other type the defects seemed to result from friction be-

tween the teeth and the food. The occlusal surfaces were flattened, and the masticatory efficiency was reduced.

Low surface hardness is considered the most likely cause of the abrasion. It has also been shown, in other work, that free monomer is present in the polymerized product and that the resulting non-homogeneous areas are less resistant to mechanical and chemical action.

▼ Crown and bridge

Marginal seepage around acrylic resin veneers in gold crowns

Abraham Lamstein and Harry Blechman. *J.Pros.Den.* 6:706-709 Sept. 1956

Evidence is presented to confirm the existence of marginal seepage and percolation under acrylic resins of the gold acrylic veneer crowns.

Twenty similar cast gold veneer crowns were made, each with a gingival extension about ¼ inch long. This extension formed a collar on which a plastic or rubber tubing could be fitted firmly. Two crowns had no perforations in the gold window and the others were perforated in various designs.

The acrylic veneer crowns were sterilized and the sterilized crowns attached to the rubber tubing of the inner section. The inner section was filled with the same sterile broth as the outer section. The test microorganism, *Micrococcus pyogenes,* was inoculated into the infusion broth of the outer tube and the entire assembly was incubated for 24 hours. Growth of the microorganism manifests itself in increased turbidity, sediment and an indicator change from red to yellow.

In a dye penetration study, an outer tube contained a dilute solution of alkaline methylene blue and the inner section contained distilled water. The open end of the glass tubing of the inner section was attached to a filter pump and vacuum was applied for five minutes.

Of ten perforated crowns tested, one did not show microbial penetration to the inner section. All of the perforated crowns were vulnerable to penetration by the diluted methylene blue solution. To determine the origin of this penetration, the margins or acrylic resin-gold junctions were covered with sealing wax. When this was done, contamination of the inner section did not occur.

Sections of dye-penetrated acrylic veneer crowns revealed the path of seepage as occurring at the gold-acrylic resin margin. From there the dye spread below the acrylic facing and through the perforations in the gold window. The permeability of the acrylic veneer was negligible.

The use of cast gold acrylic veneer crowns with perforated gold windows is contraindicated.

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Setting of "physiognomic" crowns made of self-curing acrylic resin

(Confectionarea caroanelor fizionomice din acrilat autopolimerizabil)

M. Chiru-Mocanu, G. Timosca, M. Andrei and M. Pavelscu. *Stomat., Bucharest* 3:247-250 July-Sept. 1956

The suitability of self-curing acrylic resin as a material for constructing esthetic crowns has been investigated recently at the Dental Institute of the University of Bucharest, Romania.

Satisfactory results and esthetic effects can be obtained in setting of crowns made of this material, because self-curing acrylic resin can be easily colored or stained to match the teeth in the mouth. The color will remain unchanged for an indefinite time.

The technic used in preparation of crowns of all types (plain, reinforced and veneer) made of self-curing acrylic resin is similar to the technic commonly employed in the construction of crowns made of porcelain.

At the dental institute, acrylic resin was used in the construction of crowns for anterior and posterior teeth.

The results obtained in the investigations prove that self-curing acrylic resin is a suitable material for crowns of all types. These crowns fulfill all the prerequisites of perfect dental restorations, especially in regard to esthetics; they possess an excellent adaptability to the neck of the teeth, perfect contact points, and they are comparatively inexpensive.

Another advantage is that this material permits timesaving manipulation.

Crowns made of self-curing acrylic resin give excellent service, provided that proper construction technics have been employed.

Catedra de Stomatologie IPSMF, Iasi, Romania

Cementation of fixed restorations

I. Gerson. *J.Pros.Den.* 7:123-125 Jan. 1957

Cementation, the final step in fixed restorative dentistry, may contribute to the success or failure of the best fitting crown or bridge. It is a common experience to find an increased occlusal vertical dimension where, before cementation, the restoration occluded perfectly.

Precision casting of the modern cast crown or the plastic veneered cast gold crown produces perfectly and snugly adapted crowns, with the entire interior surface and the margins in intimate contact with the preparation. Though a tight fit of a crown is desirable, it may be the source of trouble and failure. The tight fit, coupled with the resistance to flow caused by the viscosity of the cement, prevents the full escape of the cement. A certain thickness of the cement remains interposed between the prepared tooth and the crown. This difficulty is increased when large bridges involving a quadrant or a full arch with many abutments are to be cemented.

A simple technic to relieve the inner strain or resistance caused by the trapped cement takes advantage of the acrylic facing on the acrylic-faced cast gold crown or the acrylic veneer crown.

A round bur is used to drill a hole through the plastic and gold backing, reaching the inside of the crown. A no. 1 round bur is used for the anterior teeth, a no. 2 round bur for the large bicuspids and molars. Care is taken not to cut into any thin areas or into the relatively thin wall which backs the acrylic facing. The drilled hole will act as an "escape" through which the excess cement will ooze freely.

On incisors and cuspids, the escape hole should be located on the distolabial surface of the incisal third, as close to the contact area as possible, in order not to affect the appearance of the crown. On bicuspids, the escape hole should be drilled at the distobuccal line angle. On molars, it should be located on the buccal surface at the junction of the middle and the occlusal third of the restoration. If a plastic pontic is adjacent to a full crown abutment, a hole can be drilled diagonally from the plastic facing of the pontic through the contact point into the abutment.

On cementation, pressure should be applied to the restoration as long as cement continues to ooze. When no more cement appears, the occlusion should be checked because the resistance to the complete seating of the crown or bridge may be caused by improper placement or wedging. After cementation, a round bur slightly larger than the escape hole is used to drill out the freshly set cement to a depth of about 3 mm. or less if the plastic facing is thinner. Care must be taken not to drill into the tooth. The escape holes are then cleaned of debris and dried.

A self-curing resin filling material of the right shade is mixed to a fairly thin consistency and placed in an applicator tube with a fine nozzle. The acrylic resin is injected into the escape holes. Immediately before the resin has set, some dry resin powder is added to the resin in the escape holes to absorb the excess monomer and speed the setting. This will produce a hard resin plug in the hole. After the resin has set, it is then polished.

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Orthodontics and pedodontics

▼

Orthodontics

Possibilities and limitations of orthodontic treatment with activators

(Möglichkeiten und Grenzen der Behandlung mit dem Aktivator)

Leopold Petrik. *Fortschr.Kieferorthop.* 16:195-210 Jan. 1956

More than twenty years ago Andresen described the basic form of the functional, removable, orthodontic appliance, the activator. This apparatus later was modified by Häupl.

Tissue-forming, functional stimuli originating from the activity of the tongue, lips, facial and masticatory muscles are transmitted to the teeth, periodontal tissue, alveolar bone and temporomandibular joint by the activator. The appliance must be constructed so that it is loose fitting. It is inserted between the teeth and worn until the transmitted stimuli produce the desired changes.

Because the Andresen-Häupl activator increases the action and regulates the function of various muscle groups, a tongue which is posteriorly malposed, can acquire normal development, correct position and normal function.

After use of an activator, the patient's tongue again can become an organ of retention. The widening and stretching of both dental arches is achieved by the functional stimuli. The dental arches will contribute again to the maintenance of the correct height of the bite.

The inserted activator also directs the erupting teeth into normal position. It stimulates correct opening and closing of the lips, changes habitual mouth breathing to nose breathing, improves the gingival condition and decreases caries frequency.

In the construction of activators, consideration must be given to the following: (1) the determination of specific muscles or muscle groups to be activated to provide the source of functional force; (2) the proper covering of certain parts of the soft tissue, depending on the tooth type to be moved, and (3) the selection of the teeth which are to be subjected to muscular force, and of the direction of tooth movements.

Knowledge of the "working bite" is a prerequisite for activator construction to establish the most suitable functional relationship between the jaws. The established relation then is transferred to the casts with a wax bite. The casts are fixed (articulated) in the working bite relationship. The relations of the jaws should not be altered more than one-eighth of an inch after completed activator construction.

In deep overbite, the mandibular anterior teeth should be forced to bite into a flat or slightly inclined plane. Molars and bicuspids, however, should be kept out of the occlusal contact during this procedure.

In open bite, the molars should be forced to occlude on extensions (flanges) which are fitted over the occlusal surfaces. A metal post, inserted in the anterior part of the appliance, keeps the tongue from twisting between the upper and lower incisors.

To obtain a lateral expansion of the lower arch, the inclined plane can be added which contains directing grooves for each tooth to be moved.

The Orthodontic Clinic of the University of Vienna recently has published statistical data on success and failure of orthodontic treatment with activators in Class II, Division 1 malocclusions.

In 86 per cent, positive results were achieved; in 65.5 per cent of these, there was complete correction of the malocclusion, and in 20.5 per cent a functional, morphologic and esthetic improvement.

The failures in the remaining 14 per cent probably were caused by (1) the patient's lack of familiarity with the activator; (2) irregular wearing; (3) unfavorable secondary reactions, mostly of an allergic nature, and (4) a muscular weakness, present before treatment, which could not be improved.

Orthodontic treatment with activators is contraindicated in instances of a rachitic open bite or true prognathism.

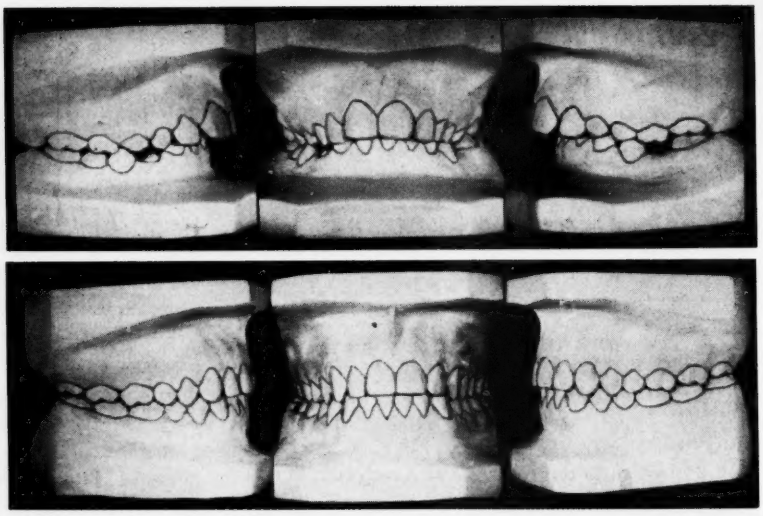


Figure 1 Above: Patient, an 8 year old boy, before treatment. Below: Eleven years after treatment

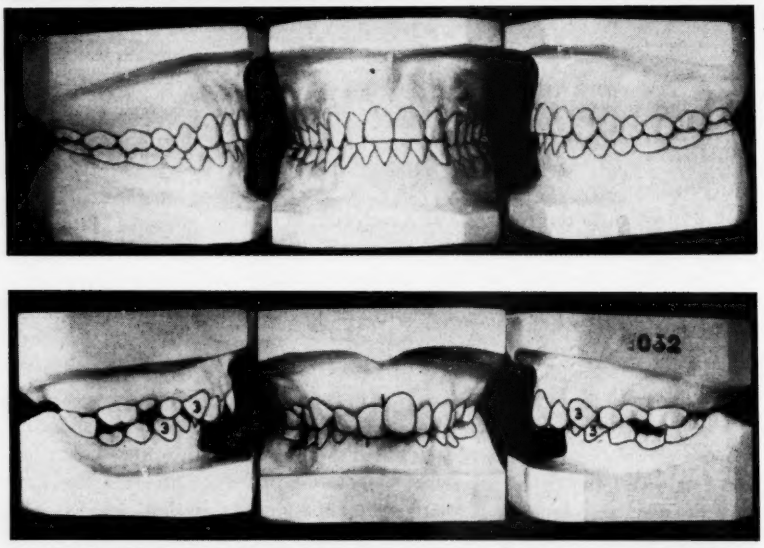
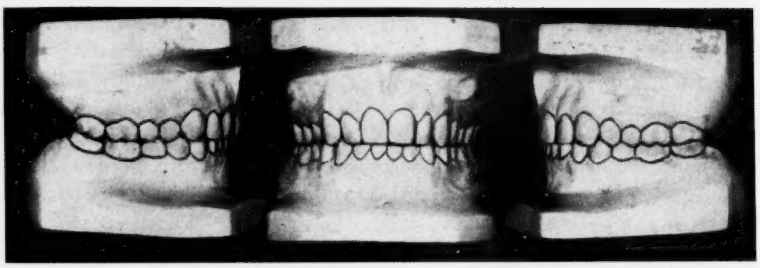


Figure 2 Above: Patient, an 11 year old girl, before treatment. Below: Six years after treatment



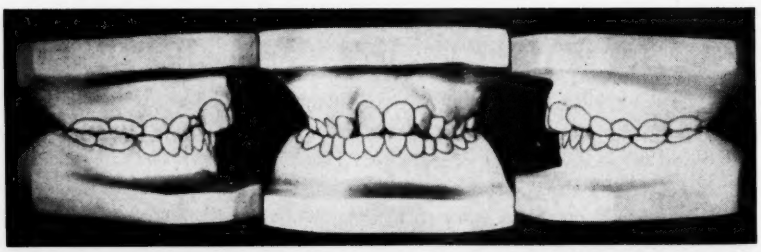
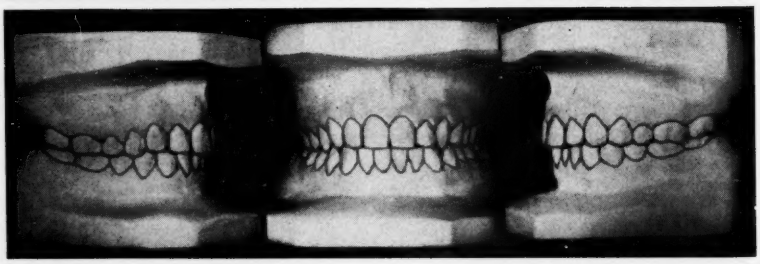


Figure 3 Above: Patient, a 7 year old girl, before treatment. Below: Seven years after treatment



The activator can be combined with other orthodontic appliances for such purposes as: (1) the opening of the bite preliminary to additional treatment; (2) the correction of distoclusion (when used in combination with intermaxillary elastic rubber bands); (3) the retention after correction of distoclusion; (4) the restoration to normal by myofunctional therapy, and (5) the freeing of locked teeth or tooth groups.

It is not absolutely necessary that the activator comes into direct contact with the teeth to be moved, because the tooth movement often is influenced by stimuli exerted by functional forces directed toward the palate. Primary alterations in the bones are not caused by transmission of force from the teeth to the bones. The tooth movement desired follows secondarily to changes in the bones.

Reichsratsstrasse 7, Vienna, Austria

Immediate torsion:
a preliminary report on twenty-three cases

G. E. M. Hallett. *D.Practitioner* 7:108-112 and 126-135 Dec. 1956 and Jan. 1957

In the orthodontic operation of immediate torsion, under local or general anesthesia, the crown of the tooth is seized by special forceps designed to prevent the tooth leaving its socket. With a steady and mounting force, a rotary movement is applied. When the tooth is loosened—that is, when all the fibers of the periodontal membrane rupture—the tooth will turn easily. It must not be pressed too firmly in an apical direction. In its new position, it is steadied and then splinted.

In the author's operation, the splint is only partly prefabricated by constructing orthodontic bands on one or more of the adjacent teeth and also to the turned tooth before operation. To the stabilizing teeth is welded a piece of 1 mm. stainless steel wire. Immediately after torsion (when a local anesthetic is used), or a half to three quarters of an hour afterwards (when a general anesthetic is used), the bands are reapplied and the bar adjusted with pliers until it lies passively on the band on the turned tooth. A light weld is made and the splint tried again. If all is correct, a full weld is made. The splint is cemented, left in place two or three weeks, and removed. None of the author's patients has suffered postoperative discomfort.

Immediate torsion was used successfully by John Tomes, Cunningham, J. F. Colyer, Bocquet-Bull and others, but this operation has been less used in recent years.

This method has several advantages. The esthetic improvement is manifest in three weeks or less, depending on how long the splint is kept in place. There is no tendency to a relapse to the former position, and the patient has practically no discomfort. If an appliance correction were easy to accomplish, there would be no reason to contemplate the surgical method, but the rotation of single-rooted teeth is not always easy; and once achieved, the condition tends to relapse.

Immediate torsion is probably a matter of autogenous replantation with the tooth never leaving the socket. It is doubtful if the afferent or efferent vessels are twisted; they probably will rupture along the lenticular boundary of the epithelial diaphragm, after which rapid healing with revascularization ensues. There is a minimum of sepsis because the tooth never leaves the socket; therefore, healing conditions are optimal.

Twenty-one cases are reported, and the author hopes to follow most of these for eight years.

The response to the operation is variable. With the same technic of turning and stabilization, some teeth show considerable resorptive changes, others practically none. In several instances, the resorption was not apparent until three or four years after the operation. Degenerative changes in the pulp leading to necrosis occurred in one instance. Vitality is maintained in the majority of instances, even in those where resorption is pronounced. One disadvantage is that, if resorption occurs, repair may be followed by ankylosis. The tooth seems then to remain at its original level in relation to the cranial base, being left behind by the descent of the occlusal plane. Occasionally, the enamel is chipped. The gingival condition has remained uniformly good, and in no instance have any deep or significant pockets developed.

Immediate torsion on single rooted teeth is demonstrably successful. Teeth so turned are now serving well with good vitality, without sepsis, and without change of color or periodontal break-

down more than seven years after treatment. In most instances some resorption of the root takes place which is usually followed by repair tissue and eventually a *status quo* is established.

It is suggested that in instances of gross rotation, in cleft palate, and in patients with supernumerary involvement, immediate torsion justifiably may be employed. The method is also recommended for those patients who have to travel long distances so that regular attendance is difficult or impossible.

120, Queen's Road, Monkseaton, Northumberland, England

▼ Pedodontics

Grinding of teeth (Rechinamiento de dientes)

Dionisio Perez y Perez. *An.españ.odontoestomat.* 15:931-937 Dec. 1956

Bruxism is frequently brought to the dentist's attention, especially in school children. These patients are generally constitutionally asthenic and psychologically unstable, with vagal disorders.

Their lack of adaptation and conflicts with members of their family, with their friends or schoolmates, are superimposed on their weak personalities and cause oral disturbances. Nocturnal grinding of the teeth is frequently present with lip biting, sucking or continual chewing.

The dentist has an excellent opportunity to study the patient's reactions intimately in the dental chair, and the treatment is principally psychological. The mental problems must be discovered and clarified, and the psychic trauma eliminated.

Splints are seldom used as they tend to focus the patient's attention on his oral problems, thus increasing them in his mind. All cavities, abnormal occlusal relations and malocclusions should be treated.

In instances of bruxism the dentist has a unique opportunity to use his medical and psychological knowledge, in addition to his mechanical skill.

Cardenal Mendoza, 9, Siguenza, Guadalajara, Spain

Treatment of a brownish black calculus formation (Entstehung und Behandlung eines braunschwarzen Zahnbelages)

H. H. Rebel. *Deut.med.Wschr.* 81:1722 Oct. 28, 1956

The patient, a two and a half year old girl, showed a peculiar brownish black calculus formation which had been observed since she was ten months old. This concretion, abnormal in color and density, covered the necks of the teeth completely and was visible also in the grooves of the molars. After several scalings, calculus reappeared. The patient's dentition was free of carious lesions, and no symptoms of rickets were observed.

Aside from its esthetic appearance, this peculiar black stain deposit seems to be insignificant. It occurs in about 11 per cent of deciduous teeth which are examined periodically by school dentists. A similar calculus formation is observable in about 10 per cent of permanent teeth. Calculus deposits of this kind do not promote or produce caries. Such formations appear more often in dentitions which are caries resistant than in caries susceptible dentitions. Therefore, the prognosis is nearly always favorable.

This type of hard, brownish black calculus deposit must be differentiated from the soft caries plaques, the green tooth film, and the extragingival calculus formation.

Treatment consists of repeated mechanical (never chemical) elimination.

Etiology and chemical composition are rather unclear. H. Fuess, however, reported that the brownish black coat consists mainly of melanin, and that the causative factor may be found in the presence of abnormally large number of eubacteriales, *Hemophilus melaninogenicus*, in the oral cavity. This gram-positive, anaerobic, minute, pleomorphic, parasitic and nonmotile microorganism grows best in the presence of hemoglobin. It forms deep black cultures which have a slight but peculiar odor. According to Fuess, an extreme increase of *H. melaninogenicus* in the oral cavity causes pathogenic symptoms such as marginal gingivitis, oxygen deficiency, and neutral or alkaline oral conditions.

Microscopic examinations of the girl's saliva revealed the presence of large numbers of this nonsporous germ. Therefore, Fuess' theory seems to be confirmed. This microorganism usually is found only in the gastrointestinal tract or in the region of the reproductive organs.

This brownish black calculus formation may also occur as a consequence of the presence of other anaerobic microorganisms in the oral cavity which may cause different pathologic conditions.

Clinical and practical views in children's dentistry

F. Strøm. *D.Practitioner* 7:92-95 Dec. 1956

The author's plan of dental care of children is based on systematic examination and treatment, starting when the child is three years old, and continuing at intervals of from seven to eight months throughout life. One hundred and twenty-five child patients, born between 1932 and 1948, have been thus cared for to date. None has lost a deciduous tooth before shedding time. No permanent tooth has been lost, except one central incisor in a traffic accident. No endodontic treatment has been necessary.

The pregnant mother is informed of what constitutes adequate nutrition both for herself during pregnancy and for her child at the various age periods. The mother is taught the methods to be employed in the care of the child's mouth. Up to the age of seven or eight years, the child's teeth should be brushed by the parents. If there is a tendency for food to accumulate, the teeth should be brushed after each meal. If the food debris cannot be removed with brushing or rinsing, the parent is given a little dental probe to use. The children also are instructed to use the tongue to clean their teeth after every meal.

Diagnosis of caries, malocclusion and marginal periodontitis is made as early as possible. Roentgenograms are used to diagnose proximal caries. All fissures, pits and any foramen caeca are opened with burs and permanently filled. The orthodontic evaluation of the dentition is left to an orthodontist.

Silver amalgam is used exclusively to fill deciduous teeth. Cavities of a normal depth are left unlined. The silver amalgam is inserted directly on the pulpal wall after the cavity is washed with alcohol and dried with air. Routine roentgenograms reveal whether the pulp remains undamaged. For all Class II fillings a fixed ring matrix is used, which remains *in situ* until the next day.

A special type of chronic marginal gingivitis often is found in the region of the upper anterior teeth of children between the ages of 10 and 12 years. It appears as a hypertrophic swelling near the free gingival margin running horizontally. The excess tissue is removed surgically in the following manner:

After local injection a horizontal incision is made labially at the upper border of the swelling, and the gingiva is then removed with a suitable instrument, such as a scaler. The edge created by the incision is rounded with a pair of scissors along the margin. The embrasures of the teeth are deepened to form channels. No surgical packing is used, but the child (or parent) uses tweezers to paint the wound with a 3 per cent hydrogen peroxide solution twice daily. After four days the child is re-examined and subsequently an 8 per cent zinc chloride solution is substituted for the peroxide and used for 14 days. Results are always gratifying.

Pedodontic treatment has the following aims:

1. To conserve the deciduous teeth through their normal functional period in such a way that pulp treatments or a premature loss of teeth are avoided.

2. To conserve the permanent teeth throughout life, avoiding pulp treatment and loss of teeth. The only exception is the third molar. It is frequently an advantage to have this tooth extracted.

3. An optimal tooth position.

Stortingsgatan 22, Oslo, Norway

Armamentarium

▼

Equipment

A panoramic x-ray dental machine

Donald C. Hudson, John W. Kumpula and George Dickson. *U.S.Armed Forces M.J.* 8:46-55 Jan. 1957

A panoramic dental x-ray machine for use in mass surveys and examinations has been developed at the National Bureau of Standards Dental Research Laboratory, in cooperation with the U.S. Air Force Dental Service and the U.S. Air Force School of Aviation Medicine. A prototype of the machine has been constructed. The device produces full-mouth dental roentgenograms on a single 5 by 10 inch film.

The patient is positioned, either seated or standing, beneath the moving arm of the machine which carries a roentgen-ray source and film holder. Rotation of this arm about its axis sweeps the roentgen-ray source and film about the patient's head, producing a projection of the desired tooth images on the moving film. An exposure time of about 20 seconds is required for each side of the arch. It is anticipated that, once the technic for using the machine is perfected, an experienced operator will be able to take full-mouth roentgenograms in from three to five minutes.

Adequate density has been obtained in adult human dental roentgenograms, using x-ray tube voltage and current of 65 kv. at 10 ma. Patient radiation at various points in and about the head is reduced in this method of roentgenography because a narrow beam of roentgen ray is used and repeated exposure of the same region does not take place.

Roentgenograms of the entire dentition as well as of the body and ramus of the mandible and the bony structure of the mandible and maxillary regions are produced. The presence of impacted or unerupted teeth or retained roots is shown and the general status of the alveolar bone is revealed. Fillings, bridges, and so forth, are shown, as is caries where penetration of the enamel has occurred. The information recorded is believed sufficient to establish many facts of value in mass surveys, and for specialized applications in prosthetic and surgical diagnosis.

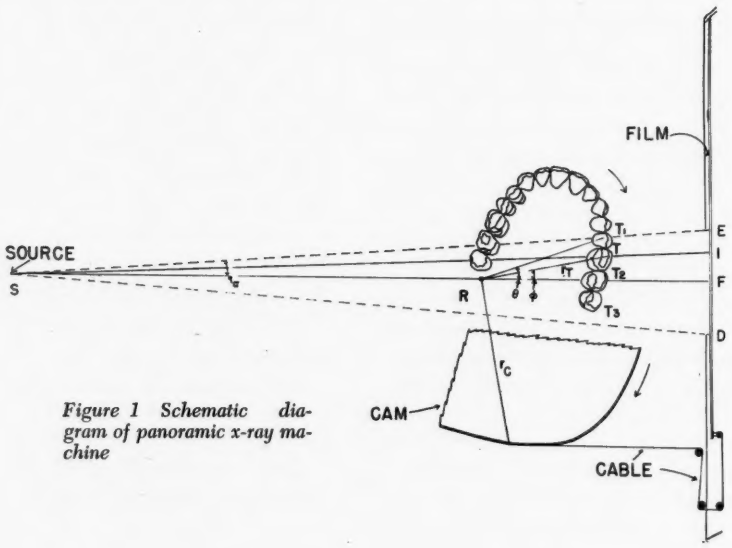


Figure 1 Schematic diagram of panoramic x-ray machine

Figure 2 Reproduction of full-mouth survey

The panoramic machine is not designed to supplant the conventional technic where the recording of extreme detail is necessary.

The machine is shown schematically in Figure 1 and photographically in Figure 3. The roentgen-ray source and film-holding mechanism are suspended from a movable arm which pivots about an axis secured to a large, fixed, horizontal support arm extending out from the main support column. A reversible motor with reduction gearing is coupled through a magnetic clutch to a pulley and belt system to drive the movable arm about the support axis. Movement is controlled by mechanical stops, permitting about 200 degrees of total rotation. A reversing switch automatic-stop device stops the machine at the end of one half-arch exposure and the machine is then moved by hand to the opposite side for the second half-arch exposure. A four-lobed cam with a cable drive moves the film inside the holder at the proper rate to secure exposure of the desired structures. Regular medical x-ray film is placed in a cassette with intensifying screens and inserted into the film carriage in the film-holding element of the machine. The carriage rolls on a horizontal track inside the film holder so that the entire film can pass a vertical slit in the center of the face of the film-holder housing. This face, which is toward the roentgen-ray source, is lined with lead; only those roentgen rays passing through the vertical slit can reach the moving film. Roentgen rays emerging from the source carried at the end of the movable arm opposite the film holder are confined by means of a lead slit so that a narrow vertical beam is projected. This beam passes directly through the subject and falls on the opening in the face of the film holder.

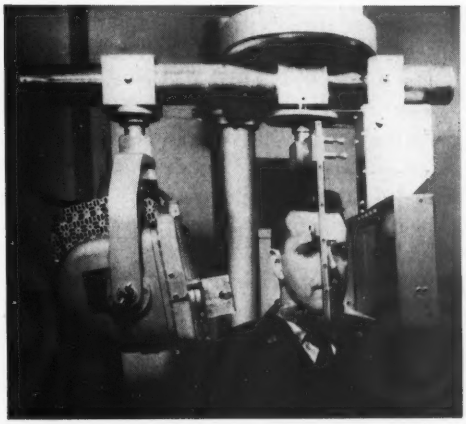


Figure 3 Panoramic x-ray machine

School of Aviation Medicine, Randolph Air Force Base, Texas

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Therapeutics

Antibiotics, especially Terramycin, in the treatment of periapical infections

(Leczenie smian okoloszczytowych za pomoca antybiotykow ze szczegolnym uwzgglednieniem teramycyny)

K. Stawinski. *Czas.stomat.* 9:589-595 Nov. 1956

The Dental Clinic of the University of Poznan, Poland, recently published a report on clinical studies with oxytetracycline (Terramycin). These studies were instituted in an attempt to evaluate the effectiveness of this antibiotic in the treatment of periapical infections in which penicillin previously had been the antibiotic of choice.

At the dental clinic, 53 patients with various types of infections and inflammations in the region of the apex were treated with a paste containing penicillin, streptomycin and sulfonamide. In seven patients, after root canal treatment, pain and edema appeared. These symptoms were interpreted as resulting from the mechanical irritation of the periodontium during the widening of the root apexes, which irritation probably had been increased by the mechanical pressure of the inserted antibiotics.

After a few days these symptoms disappeared completely. On the basis of clinical observations and roentgenographic examinations, the following conclusions were reached: (1) the paste containing penicillin, streptomycin and sulfonamide is effective in relieving the symptoms of periapical infections in the majority of instances; (2) periodontal disease which resists other treatment can be treated effectively with this antibiotic paste; (3) application of this paste shortens the treatment time in instances of nonvital pulps often to a single procedure, and (4) this treatment helps in the regeneration of bony tissue.

In instances in which no response to treatment with this antibiotic paste or to injections of penicillin was obtained within 24 days, from 1 to 2 Gm. of oxytetracycline (Terramycin) were administered orally. The patients received equal doses every six hours with a glass of milk. Within 24 hours, the infection responded to treatment. The conclusions reached were as follows: (1) oxytetracycline is rapidly absorbed by the gastrointestinal tract, and, therefore, oral administration is preferred to injections; (2) significant blood levels are attained within two to four hours and maintained for from 6 to 12 hours after administration of double doses; (3) although oxytetracycline has a low toxicity, diarrhea and other gastrointestinal disturbances occurred in a few instances, and (4) in a series of 42 instances of treatment of periapical infection with oxytetracycline, this antibiotic has proved to be an effective agent.

The lack of allergic manifestations, the broader spectrum of activity, the relatively short treatment time required, and the established effectiveness make this broad-spectrum antibiotic a valuable addition to the armamentarium of the dentist in private practice.

Swiecickiego 4, Poznan, Poland

Clinical picture and pathogenesis of toxic symptoms caused by penicillin, penicillin ester and tetracycline

(Klinisches Bild und Pathogenese der Vergiftungserscheinungen mit Penicillin, Penicillin-Ester und Tetracyclinen)

Hans Bohn and Eberhard Koch. *München.med.Wschr.* 98:1589-1504 Nov. 23, 1956

In medical and dental literature, too little is published on toxic symptoms occurring after medication with penicillin or tetracycline preparations. Under certain conditions, these antibiotics may cause serious symptoms of poisoning.

In man and animal, the most sensitive organ to the poisonous effects of antibiotics is the brain.

The characteristic syndromes of penicillin poisoning consist of convulsion, pulmonary edema, pulmonary hemorrhage and protracted enterocolitis, and are caused by the reactions of the cerebrum to the antibiotic used.

Various protective functions against these toxic actions are active in the organism, especially the so-called blood spinal fluid barrier and the penicillinase in the cerebral tissue. These inactivating

effects, however, are often counteracted by special manners of applications (intrathecal) and can be impaired by the presence of various diseases which have lowered the power of resistance.

Penicillin ester preparations frequently penetrate the protective blood spinal fluid barrier and cause severe toxic effects. These preparations, therefore, cannot be recommended for use in medical and dental practice.

Tetracycline has a hepatotoxic effect in patients afflicted with diseases of the liver. The characteristic symptoms of poisoning after chlortetracycline hydrochloride medication are hemorrhagic diathesis (sporadic hemophilia) with severe disturbance of prothrombin (factor VII) formation in the liver, pulmonary hemorrhage, and enterocolitis after hemorrhage in the intestinal wall. Allergic skin eruptions of an erythema multiforme type have been reported.

In most instances such as herpetic stomatitis, Vincent's stomatitis, pericoronitis, cellulitis and subacute bacterial endocarditis, small doses of tetracycline are preferable to large doses.

Klinikstrasse 32, Giessen, Germany

Stability of stored penicillin preparations
(Lagerbeständigkeit verbrauchsfertiger Penicillin-Präparate)

F. Hartwig. *Deut.Gesundheitswes.* 20:663-667 May 18, 1956

Penicillin preparations in unopened containers usually maintain their potency for periods varying between a few months and several years, if properly stored. Unused penicillin solutions should be preserved in airtight and lightproof containers, preferably in the original packages, which, if intended for parenteral use, must be kept sterile until the time of dispensation. It is questionable, however, whether these storage procedures are adequate to preserve the stability of a penicillin solution in already opened containers or of penicillin tablets and powder.

The manufacturer's directions usually advise that the penicillin preparation be used up as quickly as possible after the original package is opened. It is not established, as yet, whether storage in refrigerators preserves the stability of penicillin in opened packages.

The effectiveness of eight different penicillin preparations, after the original packages had been opened, was investigated recently under different storage conditions. The duration of the test was four weeks, and the storage temperature varied between −18° and +37° C.

The results were as follows:

1. Crystalline penicillin in sodium or potassium salt form is an extremely stable drug. It may be kept at a temperature of 100° C. for days without significant loss in potency. The expiration date of three years on vials of penicillin is conservative. Once in solution, however, the drug is not stable, and it is not advisable to keep solutions longer than three days even when held at refrigerator temperatures.

2. Amorphous penicillin is less stable in the dry state than in solutions. Amorphous penicillin solutions may be held for seven days at refrigerator temperatures without significant loss in potency.

3. Procaine penicillin in the dry state is not as stable as sodium potassium crystalline penicillin. Its critical temperature is between 70° and 80° C. In aqueous solutions, however, it is relatively stable even at room temperature but it should not be kept in temperatures above 25° C. Aqueous suspensions of procaine penicillin have an expiration date of 12 months at temperatures below 25° C.

4. For liquid depot penicillin solutions, storage at refrigerator temperatures was found to be sufficient. These solutions keep their antibiotic effectiveness.

5. Oral penicillin tablets and penicillin powders, however, even when preserved in the original single-dose or multiple-dose containers, showed slight changes in stability, especially after exposure to light.

The toxicity of penicillin, investigated in animal experiments, is extremely low. Toxic reactions to oral therapy with penicillin, however, have been reported on numerous occasions. There are also other side effects resulting from penicillin treatment which may be classified as a rather indefinite group of reactions, some being allergic in nature.

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Doctoral and Masters' dissertations

▼

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan. Copies are not available from the American Dental Association. Addresses of all schools will be provided on request.

An attempt to use the maxillary labial gingiva as anchorage. *Woodrow Wilson Walker. 1956.* M.S. *University of North Carolina.*

Histologic changes in the periodontal tissues following the use of strong orthodontic forces. *K. Wayne Humphreys. 1956.* M.S.D. *Indiana University.*

Electromyographic studies of mandibular muscles in basic jaw movements. *Judson Campbell Hickey. 1955.* M.SC. *Ohio State University.*

The effect of various scaling instruments on the root surfaces. *Wilmore Brown Leonard. 1956.* M.SC. *Ohio State University.*

Facial skeletal changes accompanying orthodontic treatment. *Henry Heim. 1956.* M.S. *Tufts University.*

The complete veneer porcelain crown as bridge retainer in the anterior region (Die Verblendkrone als Brückenanker im Frontzahngebiet). *Rosemarie Lauffer. 1955.* DR. MED. DENT. *University of Erlangen, Germany.*

Modern sterilization apparatus and their applicability in dentistry (Die modernen Apparate der Sterilisation und ihre Bewertung in der Zahnheilkunde). *Richard Meckes. 1955.* DR.MED. DENT. *University of Erlangen, Germany.*

The importance of special methods in construction of dentures and the properties and plasticity of the acrylic material "Paladon" (Die Bedeutung besonderer Verarbeitungsmethoden für die Materialeigenschaften und Formgenauigkeit vom zahnärztlichen Kunststoff "Paladon"). *Daniel Arnold. 1955.* DR.MED.DENT. *University of Erlangen, Germany.*

Development of the dental syringe during the second half of the nineteenth century: review of literature and German patent records (Die Entwicklung der Injektionsspritze in der 2. Hälfte des 19. Jahrhunderts: Nach dem Schrifttum und den Patentakten). *H. J. Grünberg. 1954.* DR.MED. DENT. *University of Frankfurt/Main, Germany.*

Epithelioma on the right maxillary alveolar process caused by trauma: report of case (Ein Fall von Plattenepithel-Carzinom im rechten Oberkiefer-Alveolarfortsatz mit traumatischer Genese). *Hans Möbus. 1954.* DR.MED.DENT. *University of Frankfurt/Main, Germany.*

Intraoral regional anesthesia of the second branch of the trigeminal nerve, and the applicability of this technic in dental practice (Die intraorale Stammanästhesie des zweiten Astes des Nervus trigeminus und ihre Anwendungsmöglichkeit in der zahnärztlichen Praxis). *Heinz Hartmann. 1955.* DR.MED.DENT. *Free University of Berlin, Germany.*

Sialolithiasis (Die Speichelsteinkrankheit). *Wolfgang Hoffmann. 1955.* DR.MED.DENT. *Free University of Berlin, Germany.*

Professional injuries and diseases in practicing dentists (Über Berufsschädigung und Erkrankungen des Zahnarztes). *Theo Otto Belser. 1955.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Postoperative treatment of ankylosis of the temporomandibular joint with activators (Über die Nachbehandlung operierter Kiefergelenks-

ankylosen mittels Aktivator). *Karl Heinz Bernsdorff. 1955.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Statistical data on the frequency of radicular cysts of the jaws (Zur Statistik der radikulären Kieferzysten). *Wolfgang Kirchner. 1954.* DR.MED.DENT. *University of Göttingen, Germany.*

Investigations of dimensional changes in 50 per cent silver amalgam fillings after insertion (Untersuchungen über das Dimensionsverhalten von 50 prozentigen Silberamalgamen in einer Kavität). *Ilse Kullmann-Kaebish. 1954.* DR.MED.DENT. *University of Göttingen, Germany.*

Chemical properties of the self-curing plastic resin "Piacryl SH" and its applicability for fillings (Untersuchungen über den Aufbau und die Anwendung des Schnellpolymerisates "Piacryl SH" als Füllungsmaterial). *Albert Hennicke, 1954.* DR.MED.DENT. *University of Halle/Saale, Germany.*

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